CURRICULUM VITAE : RICHARD F. ELLIS

1. Personal Information

Associate Professor, Department of Physics
Year of Appointment : 1983

Education

Ph.D.	Princeton University	1971	Plasma Physics
B.A.	Cornell University	1966	Physics

Employment Background

University of Maryland	2007-	Professor, Department of Physics
University of Maryland	1994-1999	Associate Chair , Department of Physics
University of Maryland	1987-1990	Asst./Assoc. Dean College of Computer, Mathematical and Physical Sciences
University of Maryland	1983-2005	Assoc. Prof. Dept. of Physics
University of Maryland	1979-1983	Asst. Prof. Dept. of Physics and Astronomy
Lawrence Livermore National Laboratory	1979-1984	Consultant
Lawrence Livermore National Laboratory	1978-1979	Physicist
Dartmouth College	1974-1978	Asst. Prof. Dept. of Physics and Astronomy
Los Alamos National Laboratory	1972-1974	Staff Member
Max Planck Inst. for Plasma Physics	1971-1972	Visiting Scientist

2. Research Activities

b. Articles in Refereed Journals(* denotes significant authorship)

Measurement of Volume Recombination Coefficients in Highly Ionized Alkali Plasmas, S. Von Goeler, R. W. Motley, and R. F. Ellis, Phys. Rev. 172, No. 1, 162-165 (1968).

*Measurement of Drift Wave Potential Oscillations in the Presence of Temperature Oscillations, R. W. Motley and R. F. Ellis, Phys. Fluids 14, 886-889 (1971).

*Collisional Drift Instability Driven by Axial Current, R. F. Ellis and R. W. Motley, Phys. Rev. Lett. 27, 1496-1499 (1971).

*Parallel Current and Sheath Effects on Collisional Drift Waves in an Axially Symmetric Device with End Plates, T. S. Tsai, R. F. Ellis, and F. W. Perkins, Phys. Fluids 15, 345-350 (1972).

*Collisional Drift Instability Driven by Axial Current, R. F. Ellis and R. W. Motley, Phys. Fluids 17, 582-588 (1974).

*Hot Electron Production and Anomalous Microwave Absorption Near the Plasma Frequency, H. Dreicer, R. F. Ellis, and J. C. Ingraham, Phys. Rev. Lett. 31, 426-429 (1973).

*Influence of Intense AC Electric Fields on the Electron-Ion Collision Rate in a Plasma, J. H. Brownell, H. Dreicer, R. F. Ellis, and J. C. Ingraham, Phys. Rev. Lett. 33, 1210-1213 (1974).

*Comparison of Local and Nonlocal Theories of the Collisional Drift Instability, R. F. Ellis and E. Marden Marshall, Phys. Fluids , 2137-39 (1979).

*Collisional Drift Instability of a Weakly Ionized Argon Plasma, R. F. Ellis and E. Marden Marshall, Plasma Phys. 22, 113-132 (1980).

*Whistler Mode Electron Cyclotron Emission in a Mirror Plasma, R. F. Ellis, G. D. Tsakiris, and D. A. Boyd, Phys. Rev. Lett. 48, 93-96 (1982).

*Electrostatic Plasma Wave Propagation in a Density Modulated Plasma, R. P. Majeski and R. F. Ellis, Phys. Fluids 25, 1416-1427 (1982).

*Spectrum of Synchrotron Emission Parallel to a Magnetic Field for Relativistic Loss Cone Type Energy Distributions, R. F. Ellis, D. B. Robinson, and G. D. Tsakiris, Phys. Rev. A 26, 3683-3685 (1982)

*Measurements of Budden Tunneling Parallel to a Magnetic Field, G. D. Tsakiris and R. F. Ellis, Phys. Rev. Lett. 49, 874-877 (Sept. 1982).

*A New Electron Energy Analyzer for Magnetized Plasmas, D. N. Arion and R. F. Ellis, Rev. Sci. Instrum. 53, 1032-1037 (1982).

*Emission, Absorption and Tunneling of Whistler Waves in an Inhomogeneous Magnetic Field, R. F. Ellis, G. D. Tsakiris, and D. A. Boyd, Phys. Fluids 26, 1528-1541 (1983).

*A Preshaping Transition Coil for a Small Minimum-B Magnetic Mirror, M. Koepke, R. P. Majeski, and R. F. Ellis, IEEE Trans. Plasma Sci., Vol. PS-11, 299-300 (1983).

*Whistler-Mode Electron Cyclotron Emission as an Electron Temperature Diagnostic for Magnetic Mirror Devices, G. D. Tsakiris and R. F. Ellis, Nucl. Fusion 23, 1115-1125 (1983).

*Measurements of Energetic Electrons in a Magnetized Hot Filament Discharge, R. F. Ellis and D. N. Arion, J. Appl. Phys. 54, 4895-4901 (1983).

*Interaction of Lower Hybrid Waves with the Current Driven Ion Acoustic Instability, R. P. Majeski, M. Koepke, and R. F. Ellis, Plasma Phys. 26, 373-385 (1983).

Thermal Barrier Production and Identification in a Tandem Mirror, D. P. Grubb et al. and R. F. Ellis, Phys. Rev. Lett. 53, 783-786 (1984).

*Electron Cyclotron Emission Diagnostics for Mirror Devices, R. F. Ellis, R. A. James, C. J. Lasnier, and T. Casper, Rev. Sci. Instrum. 56, 891-894 (1985).

*Perpendicular Electron Cyclotron Emission from Hot Electrons in TMX-U, R. A. James, R. F. Ellis, C. J. Lasnier, T. A. Casper, and C. M. Celata, Rev. Sci. Instrum. 56, 934-936 (1985).

*Upper Hybrid Emission from a Magnetized Gas Discharge Plasma, R. F. Ellis, G. D. Tsakiris, C. Z. Wang, and D. A. Boyd, Plasma Physics and Controlled Fusion 28, 327-345 (1986).

*A Perpendicular Energy Analyzer for Hot Ion Plasmas, M. J. McCarrick, R. F. Ellis, M. Koepke, and R. P. Majeski, Rev. Sci. Instrum. 56, 1463-1464 (1985).

*Three Dimensional Mode Structure of the DCLC Instability in a Mirror Trap, M. Koepke, M. J. McCarrick, R. P. Majeski, and R. F. Ellis, Phys. Fluids 29, 3439-3444 (1986).

*Collisional Drift Instability in a Variable Radial Electric Field, E. Marden Marshall, R. F. Ellis, and J. E. Walsh, Plasma Physics and Cont. Fusion 28, 1461-1482 (1985).

*Measurements of the Hot Electron Density During Initial Thermal Barrier Operation on TMX-U, R. A. James, R. F. Ellis, C. J. Lasnier, D. P. Grubb, and T. A. Casper, Phys. Fluids 29, 2748-2750 (1985).

*Emission and Absorption of Parallel Synchrotron Radiation by Magnetically Trapped Electrons, C. J. Lasnier and R. F. Ellis, Phys. Rev. A 33, 742-744 (1986).

*Experimental Observation of Bounce Resonance Landau Damping, M. Koepke, R. F. Ellis, R. P. Majeski, and M. J. McCarrick, Phys. Rev. Lett. 56, 1256-1259 (1986).

*An ECE Diagnostic for the TARA Tandem Mirror Machine Using a Fast Scanning Michelson Interferometer, S. K. Guharay, D. A. Boyd, and R. F. Ellis, Rev. Sci. Instrum. 57, 1965-1967 (1986).

*Optically Thin Perpendicular Electron Emission from Hot Electrons in TMX-U, R. A. James, C. J. Lasnier, and R. F. Ellis, Rev. Sci. Instrum., 1968-1970 (1986).

*Improved System for Perpendicular Electron Cyclotron Emission Measurements on TMX-U, C. J. Lasnier, R. F. Ellis, and R. A. James, Rev. Sci. Instrum. , 1971-1973 (1986).

*Observations of the Dependence of Unstable Drift Cyclotron Loss Cone Mode Characteristics on Plasma Density, M. J. McCarrick, J. H. Booske, and R. F. Ellis, Phys. Fluids 30, 614-617 (1987).

*Optimizing Hot Ion Production from a Gas-Injected Washer Gun, M. J. McCarrick, R. F. Ellis, and J. H. Booske, J. Appl. Phys. 61, 1747-1752 (1987).

Frequency Compensation of a Diamagnetic Loop Using a Digital Data Acquisition System, J. H. Booske, M. J. McCarrick, S. Douglass, J. Paquette, and R. F. Ellis, J. Phys. E 20, 627-631 (1987).

*Reflectance Characteristics in the Submillimeter and Millimeter Wavelength Region of a Vacuum Compatible Absorber, S. Janz, D. A. Boyd, and R. F. Ellis, Int. J. Infrared and Millimeter Waves 8, 627-635 (1987).

*Whistler Mode Electron Cyclotron Emission from Energetic Electrons in TMX-Upgrade, C. J. Lasnier, R. F. Ellis, R. A. James, T. A. Casper, and G. D. Tsakiris, Plasma Phys. and Controlled Fusion 30, 491-513 (1987).

*The Evolution of the Drift Instability from Onset to Saturation, E. M. Marshall and R. F. Ellis, Phys. Fluids 30, 3301-3303 (1987).

*Effects of Non-Thermal Electron Distributions on Parallel Electron Cyclotron Emission and Absorption for Energetic Electrons in Mirror Devices, C. J. Lasnier and R. F. Ellis, Plasma Phys. and Controlled Fusion 30, 515-527 (1988).

*Detailed Measurements of Anisotropic Mirror Plasma Ion Energy Distributions During the Drift Cyclotron Loss Cone Instability, J. H. Booske, M. J. McCarrick, R. F. Ellis and J. A. Paquette, Phys. Fluids 31, 410-417 (1988).

Modeling of an Electron Cyclotron Resonance Heated Mirror Plasma for Highly Charged Ion and Soft X-Ray Sources, J. H. Booske, F. Aldabe, R. F. Ellis, and W. D. Getty, J. Appl. Phys. 64, 1055-1067 (1988).

*Vertical Viewing ECE Diagnostic for the DIII-D Tokamak, R. A. James, B. Janz, R. Ellis, D. Boyd, J.Lohr, Rev. Sci. Inst. 59, 1611-1613 (1988).

Whistler-Mode Electron Cyclotron Emission from the Phaedrus-B End Cell, B. Cui, P. H. Probert, P. D. Brooker, P. D. Nonn, D. L. Keil, W. Hershkowitz, R. P. Majeski, R. A. Brenn, and R. F. Ellis, IEEE Trans. on Plasma Science 17, 34-40 (1989).

*Energetic Electron Parameters in the TARA Axisymmetric End-Cell Plasma From Synchrotron Radiation Spectroscopy, S. K. Guharay, D. A. Boyd, and R. F. Ellis, Nucl. Fusion 29, 839-844 (1990).

*Energetic Electron Measurements in the Edge of a Reversed-Field Pinch, J. C. Ingraham, R. F. Ellis, J. N. Downing, C. P. Munson, P. G. Weber, and G. A. Wurden, Phys.Fluids B 2, 143-159 (1990).

*Steady-State Toroidal Plasma Around a Spherical Anode in a Magnetic Field, R. G. Greaves, D. A. Boyd, J. A. Antoniades, and R.F. Ellis, Phys.Rev. Lett. 64, 886-889 (1990).

Electrical Breakdown at Low Pressure in the Presence of a Weak Magnetic Field, M. J. Alpert, J. Antoniades, D. A. Boyd, R. G. Greaves, and R. F. Ellis, J. Geophys.Res. 95, 6145-6153 (1990).

*A 19-Channel Fast Grating Polychromator for ECE Measurements in the MTX Tokamak, S. K. Guharay, D. A. Boyd, R. F. Ellis, F. J. Stauffer, and C. J. Lasnier, Rev. Sci. Instrum. 61, 3520-3523 (1990).

*Effects of Limiters on Reversed-Field Pinch Confinements, P.G.Weber, J. C. Ingraham, R. F. Ellis, G. A. Wurden, C. P. Munson, and J. N. Downing, Phys. Fluids B 3, 1701-1707 (1991).

*Generation of Millimeter Wave Gaussian Beams and Their Propagation in a Dielectric Waveguide, A. Balkcum, R. F. Ellis, D. A. Boyd and S. Guharay, Int. J. Infrared MM Waves 13, 1321-1342 (1992).

*Electron Temperature Measurements from Optically Gray Third Harmonic Electron Cyclotron Emission in the DIII-D Tokamak, M. E. Austin, R. F. Ellis, R. A. James, and T. C. Luce, Physics of Plasmas 3 (10), 3725-3731 (1996).

*Improved Operation of the Michelson Interferometer Electron Cyclotron Emission Diagnostic on DIII-D, M. E. Austin, R. F. Ellis, J. L. Doane, and R. A. James, Rev. Sci. Instrum. 68 (1), 480-482 (1997).

*An Experiment to Test Centrifugal Confinement for Fusion, R. F. Ellis, A. B. Hassam et al, Physics of Plasmas **8**, 2057-2065 (2000).

*ECE electron temperature mapping errors in high-performance DIII-D discharges, G. D. Garska, M. E. Austin, R. F. Ellis, Fusion Engineering and Design 53, 123-128 (2001)

*A flexible broadband ECE diagnostic for DIII-D, G. D. Garska, R. F. Ellis, M. E. Austin, Fusion Engineering and Design 53, 97-103 (2001)

Numerical simulation of the equilibrium and transport of a centrifugally confined plasma, Osborn BR, Ellis RF, Hassam AB
Physics of Plasmas **10 (6)**: 2389-2398 (2003)

*Spectroscopic measurements of plasma rotation and ion and neutral atom temperatures in the Maryland Centrifugal Experiment, J. Ghosh, R. C. Elton, H. R. Griem, A.Case, R. Ellis, A. B. Hassam, S. Messer, C. Teodorescu, Physics of Plasmas **11**, 3813-3818 (2004).

Vacuum ultraviolet measurements on hydrogen resonance lines in the Maryland Centrifugal Experiment, J. Ghosh, R. C. Elton, H. R. Griem, C. Teodorescu, A.Case, R. Ellis, Physics of Plasmas **12**, 034501-504 (2005).

*Steady Supersonically Rotating Plasmas in the Maryland Centrifugal Experiment,
R. F. Ellis, A. Case, R. Elton, J. Ghosh, H. Griem, A. Hassam, R. Lunsford, S. Messer, C. Teodorescu, Physics of Plasmas **12**, 055704-711 (2005).

*Experimental verification of the dielectric constant of a magnetized rotating plasma,
C. Teodorescu, R. F.Ellis, A. Case, C. Cothran, A. Hassam, R. Lunsford, S. Messer,
Physics of Plasmas **12,** 062106-112 (2005).

*Observation of momentum confinement time scalings in a rotating plasma,
S. Messer, R. F.Ellis, A. Case, D. Gupta, A. Hassam, R. Lunsford, C. Teodorescu,
Physics of Plasmas **12,** 062509-516 (2005).

* New High Rotation mode in the MCX magnetized rotating plasma, C. Teodorescu, R. F.Ellis, A. Case , A. Hassam, R. Lunsford, S. Messer, Plasma Phys and Controlled Fusion, 48, **7**, 945, 2006.

* Observations of magnetic fluctuations in the Maryland Centrifugal Experiment, S.Choi, P.N. Guzdar,A.Case,M.R.Clary,R.F. Ellis,A.B.Hassam,R. Lunsford,C.Teodorescu, I. Uzun-Kaymak , accepted for publication in April 2008 issue of Physics of Plasmas.

* Experimental study on the velocity limits of magnetized rotating plasmas,
C. Teodorescu, R. Clary, R. Lunsford, R. Ellis, A. Hassam, I. Uzun-Kaymak, W. Young
Submitted for publication to Physics of Plasmas, Dec, 2007

c. Technical Reports

Assessment of Hot Electron Microstability in the Initial TMX-U Experiments, T. A. Casper, Y. J. Chen, R. F. Ellis, R. James, and C. Lasnier, Lawrence Livermore National Laboratory Report UCID-19783 (1983).

e. Talks, Abstracts, and Other Professional Papers Presented

i. Invited Papers at Scientific Meetings(* denotes significant authorship)

*Whistler Mode Electron Cyclotron Emission, American Physical Society, R.F. Ellis, G.D. Tsakiris, D. A. Boyd, (delivered by R. F. Ellis), Bull. Am. Phys. Soc. 27, 962 (1982).

*Observations of the Drift Cyclotron Loss Cone Instability R. P. Majeski, R. F. Ellis, M. Koepke, M. McCarrick (delivered by R. P. Majeski), Bull. Am. Phys. Soc. 28, 1214 (1983).

*Electron Cyclotron Emission Diagnostics of Mirror Devices, R. F. Ellis, T. Casper, R. James, C. Lanier, (delivered by R. F. Ellis), 5th Topical Conference on High Temperature Plasma Diagnostics, (1984).

*Limiter Effectiveness in the Reversed Field Pinch, J. C. Ingraham, R. F. Ellis, P. G. Weber, J. N. Downing, C. P. Munson, and G. A. Wurden (delivered by J. C. Ingraham), American Physical Society, Division of Plasma Physics Annual Meeting (1987).

*Analyzers and Probes as RFP Diagnostics, delivered at the Workshop on the Physics of Alternative Magnetic Confinement Schemes, R. F. Ellis and J. C. Ingraham (delivered by R. F. Ellis), International School of Plasma Physics, Varenna, Italy (1990).

*Fast Electron Studies in the ZT-40M Edge Plasma, J. C. Ingraham, R. F. Ellis, et al. (delivered by J. C.Ingraham), International School of Plasma Physics, Varenna, Italy (1990).

*Centrifugally Confined Plasmas : An Alternative Concept for Fusion, A. B. Hassam and R. F. Ellis, (delivered by A. B. Hassam), Bull. Am. Phys. Soc. 45, 217 (2000)

*Centrifugally Confined Plasmas : An Alternative Concept for Fusion, R. F. Ellis, A. B. Hassam et al., (delivered by R. F. Ellis), The 4th Symposium on Current Trends in International Fusion Research, Washington, DC (2001)

*The Maryland Centrifugal Experiment : Motivation and Status, R. F. Ellis, A. B. Hassam et al., (delivered by R. F. Ellis), ICC2002-Workshop on Innovative Confinement Concepts, College Park, MD (2002)

*The Maryland Centrifugal Experiment (MCX) : Initial Results, R. F. Ellis, A. B. Hassam et al., (delivered by R. F. Ellis), ICC2003-Workshop on Innovative Confinement Concepts, Seattle, WA (2003)

*The Maryland Centrifugal Experiment and Velocity Shear Stabilization of Ideal MHD Interchanges A. B. Hassam, R. F. Ellis et al., (delivered by A. Hassam), ICC2004-Workshop on Innovative Confinement Concepts, Madison, WI (2004)

*Steady Supersonically Rotating Plasmas in the Maryland Centrifugal Experiment, R. F. Ellis, A. Case, R. Elton, J. Ghosh, H. Griem, A. Hassam, R. Lunsford, S. Messer, C. Teodorescu, (delivered by R. F. Ellis), Bull Am. Phys. Soc. 49, 98(2004)

*Supersonically Rotating Plasmas for magnetic fusion : the Maryland Centrifugal Experiment, R. F. Ellis, A B. Hassam, et al (delivered by R. F. Ellis), The 6th Symposium on Current Trends in International Fusion Research, Washington, DC (2005)

iii. Publications in unrefereed conference proceedings(* denotes significant authorship)

*Current-Driven Collisional Drift Instability in a Q-Machine Plasma; Wave Induced Losses and Anomalous Resistivity, R. F. Ellis and R. W. Motley, Proceedings on the 3rd International Conference on Quiescent Plasmas, (1971), Riso Report No. 250, Riso, Denmark, page 194.

*Anomalous Microwave Absorption Near the Plasma Frequency, H. Dreicer, R. F. Ellis, and J. C. Ingraham, Proceedings of Fifth European Conference on Controlled Fusion and Plasma Physics, Grenoble (1972).

*Hot Electron Production, Anomalous Absorption and Effect of Intense Electromagnetic Fields on Inverse Bremsstrahlung Absorption Near the Electron Plasma Frequency, J. H. Brownell, H. Dreicer, R. F. Ellis, and J. C. Ingraham, Proceedings of the 5th International Conference on Plasma Physics and Controlled Nuclear Fusion Research, Tokyo, Japan (1974).

TMX Plasma Confinement Experiments, T. C. Simonen and TMX Group, Proceedings of the 9th International Conference on Plasma Physics and Controlled Nuclear Fusion Research, Baltimore (1982).

Recent Experimental Progress in the TMX-U Thermal Barrier Tandem Mirror Experiment, W. C. Turnet et al. and R. F. Ellis, Proceedings of the 1984 International Conference on Plasma Physics, Lausanne, Switzerland (1984).

Microstability of TMX-U During Initial Thermal Barrier Operation, T. A. Casper, L. V. Berzine, R. F. Ellis, R. A. James, C. J. Lasnier, Proceedings of the 1984 International Conference on Plasma Physics, Lausanne, Switzerland (1984).

Thermal Barrier Confinement Experiments in the TMX-U Tandem Mirror, T. C. Simonen et al. and R. F. Ellis, Proceedings of 10th International Conference Plasma Physics and Controlled Nuclear Fusion Research, IAEA (1984).

*Reversed Field Pinch Experiments in ZT-40 M and ZT-P, K. F. Schoenberg, J. C. Ingraham, R. F. Ellis et al., Proceedings of 14th European Conf. on Controlled Fusion and Plasma Physics, Madrid (1987).

*Broadband Synchrotron Radiation Measurements in TARA Tandem Mirror Using a Michelson Interferometer, S. K. Guharay, D. A. Boyd, and R. F. Ellis, Proceedings of the EC-6 Conference, Oxford, England (1987).

RFP Confinement and Stability with Thick and Thin Shells, B. Alper, et al. and R. F. Ellis, Twelfth Intern. Conf. on Plasma Phys. and Cont. Fusion Res., IAEA (1988).

*Confinement Dynamics and Boundary Condition Studies in the Reversed Field Pinch, K. F. Schoenberg et al. and R. F. Ellis, Twelfth Intern. Conf. on Plasma Phys. and Cont. Fusion Res., IAEA (1988).

*Observations of a Stable Toroidal Discharge Around a Spherical Anode in Ionospheric Conditions, R. Greaves, D. Boyd, J. Antoniades, and R. Ellis, Proc.of 28th AIAA Meeting, Reno, Nevada (1990).

Confinement Studies in the ZT-40M Reversed Field Pinch, P. G.Weber et al. and R.F.Ellis, Proceedings of Thirteenth Intern.Conf. on Plasma Phys. and Cont.Fusion Res., IAEA (1990).

*Observations of a Stable Toroidal Discharge Around a Spherical Anode in Ionospheric Conditions, R. G. Greaves, D. A. Boyd, J. A. Antoniades, and R.F. Ellis, Proceedings of the 28th Aerospace Sciences Meeting AIAA 90-0633, Reno, NV (1990).

*Analyzers and Probes as RFP Edge Diagnostics, R.F.Ellis and J. C. Ingraham, Proceedings of the Workshop on the Physics of Alternative Magnetic Confinement Schemes, International School of Plasma Physics, Varenna, Italy (1991).

*Fast Electron Studies in the ZT-40M Edge Plasma, J. C. Ingraham, R. F. Ellis, et al., Proceedings of the Workshop on the Physics of Alternative Magnetic Confinement Schemes, International School of Plasma Physics, Varenna, Italy (1991).

*Centrifugally Confined Plasmas: Enhanced Stability Scenarios, M. G. Jackson, B. R. Osborn, R. F.Ellis, and A. B. Hassam, Proceedings of 2nd Symposium ``Current Trends in International Fusion Research: Review and Assessment," Washington, D.C. (1998).

*Centrifugally Confined Plasmas: Enhanced Stability Scenarios, M. G. Jackson, B. R. Osborn, R. F.Ellis, and A. B. Hassam, Proceedings of 2nd Symposium ``Current Trends in International Fusion Research: Review and Assessment," Washington, D.C. (1998).

*Centrifugally Confined Plasmas: Enhanced Stability Scenarios, M. G. Jackson, B. R. Osborn, R. F.Ellis, and A. B. Hassam, Proceedings of 2nd Symposium ``Current Trends in International Fusion Research: Review and Assessment," Washington, D.C. (1998).

*Steady Supersonically Rotating Plasmas in the Maryland Centrifugal Experiment, Proceedings of the 31st EPS Conference on Plasma Physics (2004) (Europhysics Conference Abstracts Vol. 28G P5.064 ISBN 2-914771-22-3)

*Steady Supersonically Rotating Plasmas in the Maryland Centrifugal Experiment, R.F. Ellis, S. Messer, A. Case, A. DeSilva , R. Elton , J. Ghosh , H. Griem, D. Gupta, A. Hassam, R. Lunsford, R. McLaren, J. Rodgers, C. Teodorescu, Proceedings of the 20th IAEA Fusion Energy Conference (2004) ISBN 92-0-100405-2.

*Supersonic Rotation Exceeding the Alfven Ionization Limit in the Maryland Centrifugal Experiment., R. Ellis,S. Messer, A. Case, R. Elton, J. Ghosh, H. Griem, A. Hassam, R. Lunsford, C. Teodorescu, To be published in Proceedings of the 32nd EPS Conference on Plasma Physics (2005)

Investigation of Narrowband ECE Bursts in DIII-D, M. E. Austin, S. Wu, R. W. Harvey, and R. F. Ellis, Proceedings of the 14TH Joint Workshop on ECE and ECRH, p179, 2006

* New High Spatial Resolution Optics for DIII-D ECE Radiometer, R. F. Ellis, M. E. Austin, D. Taussig, Proceedings of the 14TH Joint Workshop on ECE and ECRH, p183, 2006

iv. Contributed papers at scientific meetings- abstracts only (last 10 years) (* denotes significant authorship)

*Wall Reflectivity for Electron Cyclotron Frequencies in DIII-D, M. E. Austin, R. F. Ellis, R. A. James, and T. C. Luce, Bull. Am. Phys. Soc.40, 1788 (1995).

*Maryland Centrifugal Torus:An Experiment to Test Centrifugal Confinement for Fusion, R. F. Ellis, A. B. Hassam, A. W. DeSilva, and B. L. Welch, Bull. Am. Phys. Soc., 1917 (1997).

*Centrifugally Confined Plasmas for Fusion:Theoretical Considerations for MCT, A. B. Hassam and R. F. Ellis, Bull. Am. Phys. Soc. 42, 1917 (1997).

*Using ECE to Improve EFIT Results for NCS Discharges on DIII-D, M. E. Austin, G. Cima, R. F. Ellis, and T. C. Luce, Bull. Am. Phys. Soc.42, 1974 (1997).

*Maryland Centrifugal Torus: An Experiment to Test Centrifugal Confinement of Fusion Plasmas, R. F. Ellis and A. B. Hassam, Innovative Confinement Concepts Workshop, Princeton Plasma Physics Laboratory, April 1998.

*Maryland Centrifugal Torus: Electrostatics, Magnetic Geometry, and Particle Orbits, M. G. Jackson, R. Ellis, and A. Hassam, Bull. Am. Phys. Soc. 43,1719 (1998)

Maryland Centrifugal Torus : A Numerical MHD Study, B. Osborn, R. Ellis, and A. Hassam, Bull. Am. Phys. Soc. 43,1719 (1998)

*Magnitude and Possible Causes of the ``ECE Overlap Problem" in NCS DIII-D Plasmas, G. D. Garstka, R. F. Ellis, M. E. Austin, L. L. Lao, Y. R. Lin-Liu, and B. W. Rice, Bull. Am. Phys. Soc. 43,1892 (1998)

*Maryland Centrifugal Torus-2, R. F Ellis, A. Hassam, S. Guharay, S. Messer, B. Osborn, Bull. Am. Phys. Soc. 44,48 (1999)

Liquid Metal Flows Encasing a Magnetic Cavity, A. Hassam,D. Goel, J. F. Drake, R. F Ellis, D. P. Lathrop , Bull. Am. Phys. Soc. 44,276 (1999)

*Implementation of a Fast Broadband ECE Measurement on DIII-D, G. D. Garska, , R. F. Ellis, M. E. Austin, Bull. Am. Phys. Soc.44, 174 (1999).

*Transport in Centrifugally Confined Plasmas, R. Rojas, D. Goel, S.Messer,R.F. Ellis, and A. Hassam, Bull. Am. Phys. Soc. 45,180 (2000)

*The Maryland Centrifugal Torus (MCT), R. F Ellis, A. B. Hassam,S. Messer, R. Rojas, Bull. Am. Phys. Soc. 45,211 (2000)

*Status of the Maryland Centrifugal Experiment (MCX), R. F Ellis, D. Gupta, A. B. Hassam, S. Messer, Bull. Am. Phys. Soc. 46, 227 (2001)

*The Maryland Centrifugal Experiment (MCX): Progress and Plans, R. F Ellis, A. Case D. Gupta, A. B. Hassam, R. Lunsford, S. Messer, Bull. Am. Phys. Soc. 47, 214 (2002)

*Theoretical Basis of Centrifugal Confinement in MCX, A. B. Hassam, Y. Huang, R. F Ellis, S.. Messer, Bull. Am. Phys. Soc. 47, 214 (2002)

*Status of the Maryland Centrifugal Experiment, D. Gupta, R. F. Ellis, A. B. Hassam, S. Messer, Innovative Confinement Concepts Workshop, College Park, MD (2002)

*Spectroscopic Measurements of Plasma Rotations in MCX, J. Ghosh, R. Elton, H. Griem, C. Teodorescu, A. Case, R. F Ellis, A. B. Hassam, S. Messer, Bull. Am. Phys. Soc. 48, 64 (2003)

*Status of the Maryland Centrifugal Experiment (MCX), S. Messer, R. F Ellis, A. Case, J. Ghosh, R. Elton, H. Griem, A. B. Hassam, R. Lunsford, R. Mclaren, J. Rodgers, C. Teodorescu, Bull. Am. Phys. Soc. 48, 63 (2003)

*Magnetic Fluctuations in MCX: A. Case, A. Desilva, R. F Ellis, J. Ghosh, R. Elton, H. Griem, A. B. Hassam, Y. Huang, R. Lunsford, R. Mclaren, J. Rodgers, C. Teodorescu, A. B. Hassam, S. Messer Bull. Am. Phys. Soc. 48, 64 (2003)

*Supersonic Rotation and Confinemement on MCX, S. Messer, A. Desilva, R. F. Ellis, J. Ghosh, R. Elton, H. Griem, R. Lunsford, C. Teodorescu, A. B. Hassam, S. Messer, Innovative Confinement Concepts Workshop, Seattle, WA (2003)

*Diagnostic Upgrades on the Maryland Cetrifugal Experiment, A. Case, A. Desilva, R. F. Ellis, J. Ghosh, R. Elton, H. Griem, A. B. Hassam, R. Lunsford,R. Mclaren, S.Messer, J .Rodgers, C. Teodorescu, 31st IEEE International Conference on Plasma Science, Baltimore, MD (2004)

*Freewheeling and Multistage plasmas on MCX, R. Lunsford, A. Case, R. F Ellis, A. B. Hassam, R. Mclaren, S. Messer,C. Teodorescu, Bull. Am. Phys. Soc. 49, 53 (2004)

*Non Monotomic Scaling in a Plasma Confined by Sheared Supersonic Rotation, S. Messer, R. F Ellis, A. Case, A. B. Hassam, R .Lunsford, C. Teodorescu, Bull. Am. Phys. Soc. 49, 53 (2004)

*Supersonically Rotating Plasmas for magnetic fusion : the Maryland Centrifugal Experiment R. F. Ellis, A. Hassam, S. Messer, A. Case, R. Elton, J. Ghosh, H. Griem, R. Lunsford, C. Teodorescu, IEEE Symposium on Fusion Engineering, Knoxvill,(Sept 2005).

*Supercritical Alfven Ionization Velocities observed on MCX.
R. Lunsford, R.F. Ellis, A. Case, R. Clary, A. Hassam, C. Teodorescu, APS Division of Plasma Physics Meeting (Oct 2005).

*Magnetic Diagnostics on the Maryland Centrifugal Experiment (MCX): Upgrades and Initial Results, A. Case, R. Lunsford, R.F. Ellis, R. Clary, A. Hassam, C. Teodorescu APS Division of Plasma Physics Meeting (Oct 2005).

*Halpha Emission Diagnostics for the Maryland Centrifugal eXperiment, R. Clary, A. Case, R. Lunsford, R.F. Ellis, A. Hassam, C. Teodorescu APS Division of Plasma Physics Meeting, (Oct 2005).

*The Maryland Centrifugal Experiment: status and plans C Teodorescu, A Case, R Ellis, A Hassam, R Lunsford, R Elton, J Ghosh and H Griem, APS Division of Plasma Physics Meeting, (Oct 2005).

*Measurements of Rotational Velocity Shear and Interchange Stabilization in the Maryland Centrifugal Experiment, R.F. Ellis, A. Hassam, R. Elton , J. Ghosh , M. R. Clary, R. Lunsford, C. Teodorescu, 21st IAEA Fusion Energy Conference, Chengdu, China (2006).

*Overview of the Maryland Centrifugal Experiment, R. F. Ellis, A. Hassam, M. R. Clary, R. Elton, R. Lunsford, C. Teodorescu, A. Case , M. Phillips, D.. Witherspoon, Bull Am. Phys. Soc 51, **305**(2006).

*Momentum Transfer to rotating magnetized plasma from gun plasma injection.
A. B. Hassam, I. Shamin, F. D. Witherspoon, M. Phillips, Bull Am Phys Soc 305**(** 2006**)**

*Neutral Profile on the Maryland Centrifugal Experiment (MCX): R. Clary, R.F. Ellis, A. B. Hassam, S. W. Ng, R. Lunsford, C. Teodorescu ,Bull Am. Phys. Soc 51**,** 305**(** 2006**)**.

*Velocity Limits and discharge performance in the Maryland Centrifugal Experiment, R. Lunsford,, R.F. Ellis, A. B. Hassam, C. Teodorescu , Bull Am. Phys. Soc 51**,** 305**(** 2006**)**

*Measurements of Plasma isorotation on MCX, C. Teodorescu, R. Clary, R. F. Ellis, A. B. Hassam, R. Lunsford, Bull Am. Phys. Soc 51**,** 305**(** 2006**)**

***** Four posters presented at APS division of Plasma Physics annual meeting, Nov 2007

v. Colloquia and Seminars (since 1980)

The Prospects for Fusion Power, IBM Science Center, Palo Alto, CA., Jan. 1980

Overview of U.S. Mirror Fusion Program, , Plasma Theory Seminar, University of Maryland at College Park., Jan. 1981

The U.S. Mirror Fusion Program, , Colloquium, Department of Physics, Dartmouth College, Hanover, NH., March 6, 1981

Whistler Mode Electron Cyclotron Radiation from a Mirror Plasma, Plasma Physics Seminar, Cornell University, Ithaca, NY, April, 1981.

Cyclotron Radiation from a Mirror Plasma, Plasma Physics Seminar, University of Wisconsin, Madison, Wisc., Sept., 1981

Whistler Mode Cyclotron Radiation as a Diagnostic on TMX-Upgrade, Magnetic Fusion Energy Division Seminar, Lawrence Livermore National Laboratory, Nov., 1981

Cyclotron Radiation in a Mirror Plasma, , Atomic, Molecular and Plasma Physics Seminar, New York University, New York, NY., Dec., 1981

Synchrotron Radiation as a Diagnostic in Mirror Machine Plasmas, Seminar at the National Bureau of Standards, Gaithersburg, MD, March, 1982

Whistler Mode Emission and Absorption and Diagnostic Applications, Plasma Physics Group Seminar, Columbia University, April, 1982,

Whistler Wave Cyclotron Emission and Diagnostic Applications for Mirror Machines, Plasma Fusion Center Seminar, Massachusetts Institute of Technology, June 1982

Magnetic Mirror Fusion, Colloquium, Department of Physics, University of Maryland, College Park, MD, October 1982

Cyclotron Diagnostics for TARA, TARA group seminar, Massachusetts Institute of Technology, February 1982

Emission, Absorption, and Tunneling of Whistler Waves, Space Physics Seminar, Stanford University, January 10, 1984

Magnetic Fusion Energy at the Crossroads, Physics Dept. Seminar, UMBC. October 15, 1984

Electron Cyclotron Emission from Mirror Devices, Plasma Fusion Center Seminar, Massachusetts Institute of Technology, Nov. 1984,

Measurements of Energetic Electrons in Mirrors Using Synchrotron Radiation, Plasma Physics Seminar, Cornell University, Ithaca, NY, Oct. 1986.

Energetic Electrons in the Edge of ZT-40, Plasma Physics Seminar, Los Alamos National Laboratory, August 1987.

Energetic Electrons in the Edge of HBTIC, Plasma Physics Seminar, Los Alamos National Laboratory, March 1989.

The Physics of the RFP Edge, Plasma Physics Seminar, University of Maryland at College Park, April 1989.

Energetic Edge Electrons in Reversed Field Pinches, Plasma Physics Seminar, Department of Physics, University of Wisconsin, Madison, Wisconsin, May 1989.

Energetic Edge Electrons in Reversed Field Pinches: Stochastic Field Lines and Anomalous Transport, Seminar, Department of Applied Physics, Columbia University, May 1990.

Centrifugally Confined Plasmas for Magnetic Fusion (with A. Hassam), Seminar, Naval Research Laboratory, April 1998.

The Maryland Centrifugal Experiment : Centrifugally Confined Plasmas for Magnetic Fusion, IREAP, University of Maryland, 2001

The Maryland Centrifugal Experiment : Centrifugally Confined Plasmas for Magnetic Fusion, 2002, Department of Applied Physics, Columbia University, May 2002.

The Maryland Centrifugal Experiment : Centrifugally Confined Plasmas for Magnetic Fusion, Dartmouth College, February, 2003

The Maryland Centrifugal Experiment : Centrifugally Confined Plasmas for Magnetic Fusion2001, IREAP, University of Maryland, April 2004

The Maryland Centrifugal Experiment : Centrifugally Confined Plasmas for Magnetic Fusion, Fusion Division, General Atomics Division, 2004

Supersonic Rotation in The Maryland Centrifugal Experiment, Fusion Research Center, Massachusetts Inst. Of Technology, Feb. 2005

Supersonic Rotation in The Maryland Centrifugal Experiment, Columbia University Department of Applied Physics, March 2006.

Contracts and Grants

Principal Investigator with D. Boyd, C. S. Liu and E. Ott on NSF grant, High Temperature Plasmas.
1980 - 1986 $1,425,000

Principal Investigator on contract with Lawrence Livermore National Laboratory, Submillimeter Wave Grating Polychromator for the MTX Tokamak
1988 – 1989 $ 97,000

Principal Investigator with D. A. Boyd on DOE grant, Electron cyclotron emission diagnostics for fusion devices.
1980 - 1991 $1,696,000

Principal Investigator on contract with Lawrence Livermore National Laboratory, Electron Cyclotron Emission Diagnostics for TMX-U
1985 - 1986 $100,000

Co-Investigator with D. Boyd on contract with Office of Naval Research, Space Physics
1985 –1989 $1,200,000

Principal Investigator with A. DeSilva, G. Goldenbaum, H. Griem on DOE grant, Maryland Magnetic Fusion Research MS Spheromak
1990 - 1992 $600,000

Magnetic Fusion Energy Professional Development Grant

June 1987 - Aug. 1987
Salary plus living and travel expenses

Principal Investigator on contract with General Atomics Corporation (a DOE contractor), Diagnosis of Electron Behavior in DIII-D Using Electron Cyclotron Emission

1992 - 1998	$624,000
1999- Jan 2004	$158,000
Feb 2004-Nov 2005	$55,000
Dec 2005- Oct 2007	$55,000
Oct 2007-Nov, 2008	$29,000

Principal Investigator with A. B. Hassam, DOE grant, Centrifugally Confined Plasmas for Magnetic Fusion Energy

1998 - 2000	$100,000

Principal Investigator with A. B. Hassam, DOE grant, The Maryland Centrifugal Experiment : Centrifugally Confined Plasmas for Magnetic Fusion Energy

Sep 2000 - Sep 2003	$1,1410,000
Oct 2003 - Nov 2004	$ 480,000
Dec 2004 - Nov 2007	$1,523,000
Dec 2007 – Nov 2010	$1, 477,000

Principal Investigator on subcontracts with HyperV Corporation to Study Injection of Plasma Jets into the Maryland Centrifugal Experiment (funded by DOE office of Fusion Energy)

July 2006 – July 2007	$ 26,000
Aug 2006 - Aug 2008	$ 297,000
Dec 2006 - Feb 2009	$ 25,000

Principal Investigator on subcontract with the University of Texas to Review Electron Cyclotron Emission on the International Thermonuclear Experimental Reactor (funded by DOE office of Fusion Energy)

Oct 2006 - Jan 2007	$ 20,000
Jan 2008-Aug 2008	$ 20.000

3. Teaching, Mentoring, and Advising

a. Courses Taught (1999-2008)

PHYS 121/2	Introductory Physics Labs(1)	1999 Fall
PHYS 122	Introductory Physics (3)	2000 Spring
PHYS 121/2	Introductory Physics Labs(1)	2000 Fall
PHYS 122	Introductory Physics (3)	2001 Spring
PHYS 262	General Physics II (3)	2001 Fall
PHYS 161	General Physics I (3)	2002 Spring
PHYS 262	General Physics II (3)	2002 Fall
PHYS 161	General Physics I (3)	2003 Spring
PHYS 260	General Physics II (3)	2003 Fall
PHYS 273	Introductory Physics III (3)	2004 Spring
PHYS 276	Experimental Physics II (3)	2004 Fall
PHYS 273	Introductory Physics II (3)	2005 Spring
PHYS 276	Experimental Physics II (3)	2005 Fall
PHYS 174	Experimental Physics I (1)	2006 Spring
PHYS 275	Experimental Physics II (2)	2006 Fall
PHYS 174	Experimental Physics I (1)	2007 Spring
PHYS 260	General Physics II(3)	2007 Fall
PHYS 276	Experimental Physics III(2)	2008 Spring
PHYS 899	Doctoral Research (3-8)	2000-2008

d. Teaching Awards

Winner of the Excellence in Teaching Award 1981-82 and Continued Excellence in Teaching 1982-83, Department of Physics,
Nominated for Parents Association 2001 Outstanding Faculty of the Year Award

f. Advising

i. Undergraduate Advising

Advised approximately 2 Physics majors per year

ii. Non-Thesis Masters

Douglas Arion , 1981
Douglas Robinson, 1982
Jeffrey Cade, 1982
David Falconer, 1990

iii. Doctoral - PhD Theses Directed

Richard Majeski, *Electrostatic Waves in an Inhomogeneous Plasma*, 1979 (Dartmouth College)
Currently : Principal Research Scientist, Princeton Plasma Physics Laboratory

Elisabeth Marshall, *Drift Waves in a Nonuniformly Rotating Plasma Column*, 1980 (Dartmouth College)
Currently : scientific editor Fluent Corporation, Hanover, NH

Mark Koepke , *Mode Structure and Bounce Resonance Damping of the Drift Cyclotron Loss Cone Instability*, 1984 (University of Maryland)
Currently : Robert C. Byrd Professor of Physics, West Virginia University

Charles Lasnier , *Whistler Mode Electron Cyclotron Emission from a Tandem Mirror with Hot Electrons*, 1985 (University of Maryland)
Currently : Physicist, Lawrence Livermore National Laboratory

Michael McCarrick, *Quasilinear Saturation of the Drift Cyclotron Loss Cone Instability*, 1986 (University of Maryland)
Currently employed as a research physicist with DOD contractor

Terrence Leid (minor advisor), *Whistler Emission and Absorption Coefficients from an Anisotropic,) Multi-Component Plasma Including Dielectric Response*, 1986 (Dartmouth College)
Currently : Professor of Physics, Rowan University, NJ

Scott Janz , *Analysis of Non-Thermal Electron Cyclotron Emission During EC Current Drive Experiments on the DIII-D Tokamak*, 1992 (University of Maryland)
Currently : employed as a research physicist with NASA contractor

Andrew Case(minor advisor), *Three Wave Interactions in a Weakly Ionized Argon II Plasma*, 2000 (University of Maryland)
Currently : Research Physicist, HyperV Corporation

Sarah Messer, *Supersonic Rotation on MCX*, 2004 (University of Maryland)
Currently : Research Physicist, HyperV Corporation

Robert Lunsford, Velocity Limitations in The Maryland Centrifugal Experiment, 2007
Currently : Research Physicist with NRL contractor.

Doctoral - current research students:

Ryan Cleary
William Young

iii. Post Doctoral Associates

Dr. Richard Majeski, 1982-1984
Dr. Charles Lanier, 1986-1987
Dr. Reed James, 1984-1986
Dr. John Booske, 1985-1987
Dr. John Antoniades, 1986-1988
Dr. Michael Alport, 1987-1988
Dr. Roderick Greaves, 1988-1989
Dr. Samar Guharay, 1986-1990
Dr. Max Austin, 1992-1995
Dr. Gregory Garska, 1998-2000
Dr. Andrew Case, 2002-2005
Dr. Deepak Gupta, 2001-2002
Dr. Catalin Teodorescu, 2003-
Dr. Seung Ho Choi, 2006-
Dr. Ilker Uzun, 2006-

4. Service

a. Professional

i. Offices and Committee Memberships

University Fusion Association, Member of Executive Committee (1985-87)
Member of the National Review Panel for Magnetic Fusion Energy Fellowship Program(1987)
Member of Program Committee for Workshop on Innovative Confinement Concepts (2001-2002) and Chair of 2002 Meeting at College Park.

ii. Reviewing Activities

Reviewer for Physics of Plasmas, Physical Review Letters
Proposal review for the Department of Energy
Member of panel : The U S Department of Energy Archimedes Filter Technology Review (Nov. 2005)
Member of NSF panel to review plasma physics proposals(April 2006)

b. Campus

i. Departmental

2007-08	Member of APT Committee
1994-99	Associate Chair for Graduate Education
1993-94	Director of Graduate Studies
1993-94	Chair, Graduate Committee
1992-93	Vice Chair of Physics Council Executive Committee
1991-93	Member of Department Appointments, Promotion, and Tenure Committee
1990-91	Chair of Undergraduate Majors Laboratory Committee
1987-88	Member of APT Committee
1986-87	Research Semester, Sabbatical
1985-86	Chairman of the Appointments and Promotions Committee of LPF
	Chairman of the Undergraduate Education Committee, Member of Physics Council

ii. College

2008-09	College CORE Committee
1993-94	Chair, College Council, College of CMPS
1992-94	Chair, CMPS Space Committee
1991-93	Member of the College of CMPS Appointments, Promotion, and Tenure Committee
1987-90	Assistant and Associate Dean, College of CMPS
1986	Member of CMPS APT Committee
1985-86	Chairman of the MPSE Divisional Council
	Member of the MPSE APT Committee

1984-85 Member of MPSE Divisional Council

iii. University

2007-08 Member of Senate Executive Committee
2006-07 Member of Senate Executive Committee
2006-07 Chair of Senate PCC Committee
2005-08 Member of the Campus Senate
2005-07 President, Phi Beta Kappa
2005-06 Banneker-Key Selection Committee
2004-05 Vice president, Phi Beta Kappa
1997-98 Member of the Campus Senate Programs, Courses, Curricula Committee (PCC).
1995-97 Member of the Graduate Council
1995-96 Chair of the Campus Senate PCC Committee, Member of the Provost's Committee on Admissions and Advising
1993-96 Member, Campus Senate
1991-98 Executive Secretary, Phi Beta Kappa

c. Community Service Lectures

Fusion Power, Seminar During ``Energy Week'' at the University of Maryland, College Park, Fall 1979.

Panel discussion on energy alternatives during ``Space Exploration Week'' at the University of Maryland at College Park., Spring 1981

Nuclear Fusion, Seminar on fusion energy for a DOE workshop on ``Energy Concepts and Strategies for Secondary Science Teachers'' at the University of Maryland at College Park, Aug., 1981.

The Mirror Approach to Controlled Thermonuclear Fusion, Seminar in Physics Department at James Madison University, Harrisonburg, VA, Sept., 1981

Controlled Thermonuclear Fusion: The Best Prospect for a Safe Stable Energy Supply, Lecture delivered to the College Park Rotary Club, January 1982.

Nuclear Fusion as an Energy Source, Lecture delivered to Washington Academy of Science, Arlington, VA, Jan.,1984

Nuclear Fusion as an Energy Source, Lecture delivered to High School Physics teachers at Eleanor Roosevelt High School, Greenbelt, March 1984

Nuclear Fusion as an Energy Source, Lecture delivered to the Arlington Rotary Club., May 1984

Nuclear Fusion as an Energy Source, Nov 1984, Lecture delivered to Eastern Junior High, May 1984

Nuclear Fusion as an Energy Source, Lecture delivered to the Crystal City Rotary Club., Nov. 1984

Magnetically Confined Fusion Reactors, Lecture delivered to high school teachers, March 1989.