



**Wednesday**  
**September 26, 2018**  
**3:30 pm**  
**Room 1005 EECS**

## **Prof. John R. Cary**

**Tech-X Corporation, Boulder, CO;  
University of Colorado-Boulder**

## **Use of Computation for Understanding Plasmas**

Plasma physics was one of the first adopters of computational science with the creation of the National Magnetic Fusion Energy Computing Center. Computation has allowed the prediction of complex, nonlinear, and/or collisional phenomena, including plasma equilibria, transport, and wave propagation. This talk will review how computation has been used to predict propagation of waves into plasma for, e.g, heating and the use of strongly nonlinear waves for rapid acceleration of particles. It will then turn to the future to discuss some improvements coming by way of new algorithms and new computational paradigms. In particular, we will discuss Speed Limited Particle In Cell (SLPIC), which provides a breakthrough in our ability to model slow plasma phenomena.

**About the Speaker:** John Cary, Professor of Physics, University of Colorado, and CEO and co-founder, Tech-X Corporation, received his PhD from the University of California, Berkeley, in 1979. He previously worked at Los Alamos National Laboratory and the Institute for Fusion Studies at the University of Texas. Dr. Cary's recent service includes being associate editor for Reviews of Modern Physics, being on the Executive Committees of the Division of Plasma Physics and the Division of Beam Physics of the American Physical Society, and he is currently chair of the Division of Plasma Physics. He has advised PhD and Masters degree students and taught at all University levels. Professor Cary's interests are in computational physics including algorithm development and modern approaches, beam physics, plasma physics, nonlinear dynamics, and electromagnetics of structures. Professor Cary is a fellow of the American Physical Society with over 170 refereed publications. He received the Buneman Award for Visualization, the John Dawson Prize for Numerical Simulation of Plasmas, and the IEEE NPSS Charles K. Birdsall Award for Contributions to Computational Nuclear and Plasma Sciences.