PRISM Seminar Series – Fall 2011



"Verification and Validation in Simulations of Complex Engineered Systems"

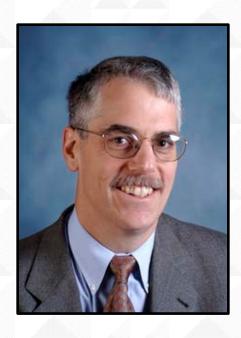


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Wednesday, October 19, 2011 11:00 am, Birck 2001

Abstract: Computational simulation is a ubiquitous tool in engineering. Further, the explosion of computational capabilities over the last several decades has resulted in the use of computational models of unprecedented complexity to make critical design and operation decisions. One potential benefit should be to improve reliability of the engineered system while reducing margins, due to the more accurate predictions such models could produce. However, realizing this benefit requires that the models employed be carefully validated, and the simulations rigorously verified. The Center for Predictive Engineering and COmputation Sciences (PECOS) at the University of Texas at Austin is developing tools and methodologies for verification and validation in the presence of uncertainty for such simulations. Among the developments being pursued are tools and techniques for code and solution verification, calibration and validation of physicsbased models using uncertain data, characterizing the uncertainties in such data, representing uncertainty due to model inadequacy and validating predictions of unobserved quantities. Central to model validation is accounting for uncertainty, and at PECOS, it is represented using Bayesian probabilities, with calibration and validation processes formulated in terms of Bayesian inference.



Bio: Dr. Robert D. Moser earned his Ph.D. in mechanical engineering from Stanford University in 1984. He joined the faculty of The University of Texas at Austin in 2005. Dr. Moser is a faculty member of the Thermal and Fluid Systems program, and serves as the area coordinator for that program. Dr. Moser is also a faculty member in the Institute for Engineering Computational and Sciences, where he is serving as Deputy Director. Finally, Dr. Moser is the Director of the DOE-funded Center for Predictive Engineering and Computational Sciences (PECOS).