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Optimal Control and Integrable Systems

In this talk we discuss a geometric approach to certain optimal control problems and the relationship of the solutions of these problems to some classical integrable dynamical systems. These systems include the rigid body equations, geodesic flow on the ellipsoid, and the Toda lattice flows. We discuss the Hamiltonian structure of these systems and relate our work to some work of Moser. We also discuss the link to discrete dynamics and symplectic integration.

Anthony M. Bloch is the Alexander Ziwet Collegiate Professor of Mathematics at the University of Michigan where he currently is the Department Chair. He received a B.Sc. (Honors) from the University of the Witwatersrand, Johannesburg, an M.S. from the California Institute of Technology, an M.Phil. from Cambridge University, and a Ph.D. from Harvard University. He has received various awards including a Presidential Young Investigator Award, a Guggenheim Fellowship, and a Simons Fellowship, and is Fellow of the IEEE, SIAM, and the AMS. He has served on the editorial boards of various journals and was Editor-in-Chief of the SIAM Journal of Control and Optimization.

