1086-37-2649　　　　**Tim Chumley**, Washington University in St. Louis, **Scott Cook*** (`scook3@swarthmore.edu`), Swarthmore College, and **Renato Feres**, Washington University in St. Louis. *From Billiard Dynamics to Thermodynamics.*

We develop a stochastic approach to thermodynamics using a randomized version of billiard dynamical systems. Our simple and explicit model gives a natural notion of temperature which, in turn, allows heat flow. Thus, we can construct machines from billiard dynamics. In this talk, we will build a simple heat engine and study characteristics like efficiency. (Received September 25, 2012)