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Stephen D Levene* (sdlevene@utdallas.edu), Departments of Bioengineering, Molecular and Cell Biology, and Physics, 800 West Campbell Rd, Richardson, TX 75080. *Knot Your Average Guy: a Tribute to Jon Simon and his Contributions to the Energetics of Physical Knots.*

The energy of a knot has been defined mathematically in many ways, often with the objective of characterizing an ideal knotted configuration. In this view the ideal knotted state is one that minimizes the associated knot energy. Simon was one of the first to recognize the importance of defining knot energy in a way that makes contact with the physical behavior of real knots including knotted polymers such as DNA. This talk will review the general concept of knot energy, emphasizing the general problem of evaluating energies for topologically and geometrically constrained polymers. We present a novel method for computing the free energy for semi-flexible polymers subject to constraints, a class of problems that has generally eluded standard computational free-energy methods due to the large fluctuations of these systems on their corresponding length scales. (Received February 10, 2014)