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Jonathan K Simon* (jonathan-simon@uiowa.edu), Department of Mathematics, University of Iowa, Iowa City, IA 52240, and **Eric J Rawdon** and **Robert G Scharein**. *Using tangling to distinguish polymer packing.*

The “average crossing number” (ACN) and “average over-pass number” (ABN) are measures of entanglement for a polymer or other filament. We can use these measures to recognize different kinds of spatial packing, in particular to distinguish between models representing different kinds of spatially dense packing: a “crumpled globule” vs. a more inter-penetrated globule.

We also investigate a variety of protein shapes using these tangle measures. (Received February 14, 2010)