1020-60-145 **Enzo Orlandini*** (orlandini@pd.infn.it), Dipartimento di Fisica, Universita' di Padova, via Marzolo 8, I-35121 padova, Italy, **Marco Baiesi** (baiesi@pd.infn.it), Dipartimento di Fisica, Universita' di Firenze, Firenze, and **Attilio Stella** (stella@pd.infn.it), Dipartimento di Fisica, Universita' di Padova, via Marzollo 8, I-35121 Padova, Italy. *Knotting frequency and knot spectrum of globular polymer rings.* Preliminary report.

In this talk some results on knotting probability and complexity for polymer rings in compact phase are presented. Ring polymers are modelled by n-steps self-avoiding polygons on the cubic lattice with nearest neighbor attractions and sampled by a MC process based on the nPERM (new pruned enriched Rosenbluth method) algorithm. Knots are detected by using the HOMFLY polynomial on simplified configurationsin which the number of crossings in a given projection have been considerably reduced by a smoothing and shortening procedure based on the BFACF algorithm. This simplification procedure is very effective allowing a good detection of knots in the compact phase. Knotting probability curves are then estimated for compact SAP's with n up to 1200 and compared with the ones for swollen SAP's with n up to 200000. An estimate of the knot spectrum, and of the frequency of prime knots with respect to the composite ones is also presented. In particular, by ordering the occurring knots with respect to their frequency a linear behaviour reminiscent of the Zipf law is found. (Received August 25, 2006)