1089-14-124 **Mateusz Michalek** (wajcha2@poczta.onet.pl), **Luke Oeding*** (oeding@math.berkeley.edu) and **Piotr Zwiernik** (pzwiernik@berkeley.edu). *Secant Cumulants.*

We study the secant line variety of the Segre product of projective spaces using special cumulant coordinates adapted for secant varieties. We show that the secant variety is covered by open normal toric varieties. We prove that in cumulant coordinates its ideal is generated by binomial quadrics. We present new results on the local structure of the secant variety. In particular, we show that it has rational singularities and we give a description of the singular locus. We also classify all secant varieties that are Gorenstein. Moreover, generalizing (Sturmfels and Zwiernik 2012), we obtain analogous results for the tangential variety. (Received February 08, 2013)