1031-53-80   **Leonor Godinho*** (`lgodin@math.ist.utl.pt`), CAMGSD, Departamento de Matematica, Instituto Superior Tecnico, 1900-142 Lisbon, Portugal, and **Jose Agapito** (`agapito@math.ist.utl.pt`). *Polytope decompositions.*

The interplay between symplectic geometry and combinatorics through the study of moment maps and the geometry of toric varieties is a well known and fertile theme in mathematics. Here we will use Witten's non-abelian localization principle in equivariant cohomology for the norm-square of the moment map in the context of toric varieties to motivate new polytope decompositions into cones. Some of these will generalize both the Lawrence-Varchenko and the Brianchon-Gram decompositions. (Received August 04, 2007)