1138-05-153 **Xi Chen*** (xc2g@mtmail.mtsu.edu), **Dong Ye** (dong.ye@mtsu.edu) and **Xiaoya Zha** (xiaoya.zha@mtsu.edu). *Resonance Polynomials of Cata-Condensed Hexagonal Systems.*

A hexagonal system is a finite 2-connected plane bipartite graph in which every interior face is bounded by a regular hexagon. A hexagonal system is called cata-condensed if it is outer planar. A set of disjoint hexagons H of a hexagonal system G is a forcing resonant set if a subgraph consisting of deleting all vertices of H from G has a unique perfect matching. The forcing resonance polynomial of G is defined as $f(x) = \sum_{i=0}^{cl(G)} a_i x^i$ where a_i is the number of distinct forcing resonant set of size i and $cl(G)$ is the Clar number of G. The polynomial can be used to enumerate the forcing resonant sets of hexagonal systems. In this paper, we compute the forcing resonance polynomial of cata-condensed hexagonal system G. Our computation results demonstrate that an isomer with larger coefficient vectors of forcing resonance polynomial has larger HOMO-LUMO gap. In other words, an isomer with larger coefficient vector is more stable. (Received February 08, 2018)