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Eduardo S. G. Leandro*, 215 Benesfort Cr, Kitchener, Ontario N2N 3B4, Canada. *Harmonic Analysis on Finite Groups and the Problem of Linear Stability of Symmetric Relative Equilibria.*

In his celebrated Adams Prize winning memoir from 1856, J. C. Maxwell used harmonic analysis to factor the so-called secular (or stability) polynomial associated to the centered regular n-gon relative equilibrium in the Newtonian n-body problem. This factorization allowed Maxwell to study the linear stability of the centered n-gon. Later on, Poincaré', Palmore, Meyer&Schmidt, Moeckel, Roberts and others have applied similar arguments in their respective linear stability and bifurcation analysis of the (centered) n-gon. In this talk, I discuss a group theoretical framework which leads to a generalization of Maxwell's factorization to other classes of symmetric relative equilibria. (Received February 06, 2011)