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John Wilmes* (wilmesj@math.uchicago.edu). *The toppling ideal and its minimal free resolution*. Preliminary report.

The chip firing game offer a fascinating bridge between combinatorial and algebraic objects. For example, Baker and Norine developed a Riemann-Roch theory on graphs using chip firing, and Cori, Rossin, and Salvy gave a correspondence between bases for certain monomial ideals and G -parking functions of undirected graphs. At the intersection of these ideas is the *toppling ideal* of an undirected graph. In this talk, I will define the toppling ideal, discuss its relation to the chip firing game, and give an explicit combinatorial description of its minimal free resolution. The results are due to joint work with David Perkinson, and subsequent work with Madhusudan Manjunath and Frank-Olaf Schreyer. (Received September 23, 2012)