**Meeting:** 1003, Atlanta, Georgia, SS 26A, AMS-SIAM Special Session on Dynamic Equations on Time Scales; Integer Sequences and Rational Maps, I

1003-05-1677 **James Gary Propp*** (propp@math.wisc.edu), 174 Cushing Street, Apartment #2, Cambridge, MA 02138. *Gale-Robinson sequences and the octahedron and cube recurrences.*

In 1991, David Gale and Raphael Robinson conjectured the integrality of a class of rational sequences that generalizes Somos sequences. I will show how their conjecture about these 1-dimensional rational recurrences follows from integrality properties of two 3-dimensional rational recurrences: the octahedron recurrence and the cube recurrence.

The octahedron recurrence was introduced by David Robbins as an outgrowth of his study of Charles Dodgson's method of evaluating determinants by condensation; it later emerged that this recurrence is really "about" perfect matchings of Aztec diamond graphs (and, more generally, the "crosses-and-wrenches graphs" of David Speyer and/or the "pinecone graphs" of Mireille Bousquet-Mélou, Julian West, and myself). Likewise, the cube recurrence turns out to describe new combinatorial objects called "groves", introduced by Gabriel Carroll and David Speyer. Both of these 3-dimensional recurrences provide instances of the Laurent phenomenon studied by Sergey Fomin and Andrei Zelevinsky.

If time permits, I may also touch upon Markoff numbers, the Robbins stability phenomenon, and properties of the sequence of algebraic degrees of iterates of a rational map. (Received October 06, 2004)