The hexahedron recurrence and the Ising model

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This is joint work with Robin Pemantle.

We introduce the ``hexahedron recurrence'', a cousin of the octahedron recurrence and cube recurrence. We show how it is related to the Ising model, and in particular uncovers a cluster algebra structure in the Ising model. An analysis of the coefficients, similar to (and inspired by) work of Peterson/Speyer, leads to a limit shape result in the underlying model.