1112-17-190 **Tevian Dray*** (tevian@math.oregonstate.edu), Department of Mathematics, Oregon State Uinversity, Corvallis, OR 97331, **John Huerta** (jhuerta@math.ist.utl.pt), Centro de Análise Matemática, Geometria e Sistemas Dinâmicos, Instituto Superior Técnico, Lisboa, Portugal, and **Joshua Kincaid** (kincajos@onid.orst.edu), Department of Physics, Oregon State University, Corvallis, OR 97331. *The 2×2 magic square of Lie groups.*

The Freudenthal–Tits magic square yields a description of certain real forms of the exceptional Lie algebras in terms of a pair of division algebras. The first two rows are well understood geometrically, with the minimal representations of F_4 and E_6 expressed in terms of the Albert algebra. In the third row, the minimal representation of E_7 consists of "Freudenthal towers", essentially a pair of Albert algebra elements. The fourth row contains E_8, whose minimal representation is the adjoint representation, and whose geometric interpretation remains unclear.

The Lie algebras in the Freudenthal–Tits magic square admit natural representations involving 3×3 matrices. Barton and Sudbery introduced the analogous "2×2" magic square, which contains no exceptional Lie algebras, but nonetheless serves as a useful arena for exploring the full "3×3" magic square.

We present here a unified treatment of the 2×2 magic square at the group level, providing a unified matrix description of the corresponding orthogonal groups, as well as an explicit construction of the corresponding Clifford algebras. We then discuss possible applications of our construction to the Freudenthal–Tits magic square, and thus to the exceptional Lie groups. (Received August 03, 2015)