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**Tevian Dray\*** (tevian@math.oregonstate.edu), Dept of Mathematics, Oregon State University, Corvallis, OR 97331. *The octonionic eigenvalue problem.*

We consider the problem of finding the eigenvalues and eigenvectors of octonionic  $3 \times 3$  Hermitian matrices, that is, elements of the exceptional Jordan algebra, also known as the Albert algebra. For real eigenvalues, most of the properties expected by analogy with the complex case still hold, provided they are reinterpreted to take into account of the lack of commutativity and associativity. There are nevertheless some interesting surprises along the way, related both to the properties of the primitive idempotents (the Cayley–Moufang plane), and to the existence of non-real eigenvalues. Possible applications to physics will be briefly discussed. (Received August 12, 2016)