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Lon H. Mitchell* (mitchell@math.ku.edu), KU Department of Mathematics, 405 Snow Hall,
1460 Jayhawk Blvd, Lawrence, KS 66049. *Simplicity of C^* -algebras using unique eigenstates.*

Let S_1, S_2 be the isometries generating the Cuntz algebra \mathcal{O}_2 . For $q > 0$, set

$$X_q = S_1 (S_1 S_1^* + q S_2 S_2^*) + (q S_1 S_1^* + S_2 S_2^*) S_2^* .$$

We show that for each λ in the spectrum of X_q , there is a unique λ -eigenstate of \mathcal{O}_2 for X_q . This fact is then used to show the unital C^* -subalgebra of \mathcal{O}_2 generated by X_q is simple. (Received September 06, 2006)