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Hugo Rodríguez Ordóñez* (hugo.rodriguez@colostate-pueblo.edu), Department of Mathematics and Physics, Colorado State University-Pueblo, 2200 Bonforte Blvd, Pueblo, CO 81001. *Homotopy classification of a bilinear map related to octonion polynomial multiplications.*

A matrix description of the multiplication in the Cayley-Dickson algebras is given. With the aid of such description, the homotopy class of the Hopf construction of the nonsingular bilinear map given by the multiplication of two linear polynomials with octonion coefficients is determined and the similarity of these polynomial maps with others constructed by various authors is investigated. Finally, using alternative descriptions of these polynomial maps and their adjoints, a homotopically nontrivial map into a Stiefel manifold is found, having connections to vector fields on spheres. (Received September 25, 2006)