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**An iterative method to compute the dominant zero of a quaternionic unilateral polynomial.**

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Summary: The aim of this paper is to propose an iterative method to compute the dominant zero of a quaternionic unilateral polynomial. We prove that the method is convergent in the sense that it generates a sequence of quaternions that converges to the dominant zero of the polynomial. The idea subjacent to this method is the well known Sebastião e Silva's method, proposed in [*J. Sebastião e Silva*, Port. Math. 2, 271–279 (1941; [Zbl 0026.05303](#))] to approximate the dominant zero of complex polynomials.

**MSC:**

[65H04](#) Numerical computation of roots of polynomial equations

[12E15](#) Skew fields, division rings

**Keywords:**

division algebra; polynomials; zeros of polynomials; quaternion

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