1163-65-351 **Maria Irene Falcão*** (mif@math.uminho.pt), Universidade do Minho, Departamento de Matematica, Campus de Gualtar, 4710-057 Braga, Portugal, and **Fernando Miranda** (fmiranda@math.uminho.pt), **Ricardo Severino** (ricardo@math.uminho.pt) and **Maria Joana Soares** (jsoares@math.uminho.pt). *Comparative study of quaternionic root-finding methods.*

Since the well-known work of Niven in the 1940's, there has been a growing interest in studying the problem of characterizing and computing the zeros (or roots) of quaternionic polynomials, mainly from the theoretical point of view. Nevertheless, in the last decade several authors proposed algorithms for finding the zeros of one-sided left quaternionic polynomials (i.e. polynomials whose coefficients are located only on the left-hand side of the powers). Most of these root-finding methods rely on the connection between the zeros of a quaternionic polynomial and the zeros of a certain real polynomial, usually with multiple zeros, and as such, they face the usual difficulties associated with the computation of multiple zeros or clusters of zeros.

In this talk we revisit some of the available numerical root-finding methods and present an iterative method entirely based on quaternionic arithmetic, which does not suffer from the aforementioned drawbacks. We also propose a collection of selected polynomials to test the performance of each method and make a comparative study based on several indicators. (Received September 03, 2020)