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In this talk we consider the problem of computing a square root of a given symmetric positive definite matrix A . To deal with this problem, we develop two fixed point schemes, which are obtained by rearranging the nonlinear matrix equation $A - X^2 = 0$ and incorporating a scaling parameter. The proposed iterative methods only require to compute one matrix inversion and at most two matrix multiplications per iteration. The global convergence is established by the Banach contraction theorem under the Thompson metric. Finally, we carry out some numerical experiments in order to illustrate the effectiveness of the proposals.

Trabajo en conjunto con Hugo Lara (Universidade Federal de Santa Catarina, Brazil) y Oscar Dalmau (Centro de Investigación en Matemáticas A.C., Mexico).