# Properties of non-commuting cycles in matrix algebras iteration

C. Correia Ramos[1], N. Martins[2], <u>A. Nascimento Baptista</u>[3]

[1] *CIMA, University of Évora*
*Department of Mathematics, University of Évora, Rua Romão Ramalho, 59, 7000-671, Évora, PORTUGAL.*
*E-mail address:* `ccr@uevora.pt`

[2] *Centro de Análise Matemática, Geometria e Sistemas Dinâmicos,*
*Department of Mathematics, Instituto Superior Técnico, Av. Rovisco Pais 1, 1049-001, Lisboa, PORTUGAL.*
*E-mail address:* `nmartins@math.ist.utl.pt`

[3] *CIMA, University of Évora*
*Department of Mathematics, ESTG, Polytechnic Institute of Leiria, Leiria, Campus 2, Morro do Lena - Alto do Vieiro, 2411-901, PORTUGAL.*
*E-mail address:* `alexandra.nascimento@ipleiria.pt`

Combining the properties of the algebraic theory with the theory of the quadratic map in the real and complex cases, we explore the properties of the non-commuting cycles arising from the iteration in matrix algebras, under the action of quadratic maps with matrix parameter. The stability domains in the subalgebra where the dynamics occurs is also studied.

# References

[1] C. Correia Ramos, Nuno Martins, A. Nascimento Baptista, *Iteration of quadratic maps on matrix algebras*, International Journal of Bifurcation and Chaos, accepted for publication, to appear.

[2] A. Baptista, C. Correia Ramos, N. Martins, *Difference equations on matrix algebras*, Discrete dynamics and difference equations - Proceedings of the 12th International Conference on Difference Equations and Applications - Lisbon, Portugal, 23 - 27 July 2007, pages 181–188. World Scientific, 2010.

[3] A. K. Serenevy, *Dynamics of polynomial maps of 2x2 real matrices*, Proceedings of the 16th Summer Conference on General Topology and its Applications, 26, 763-778, 2001/02.