

# Newton operator and Shub-Smale alpha-theory in the singular case.

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This work is in collaboration with Marc Giusti from the LIX. The Newton operator is well known in the regular case. We show how to construct an operator which allows to approximate quadratically an isolated root of a polynomial system. We give also the radius of a ball where the quadratic convergence holds (gamma theorem) and a condition which proves the existence of a singular root (alpha-theorem).