The arctangential heat equation: geometry and numerics

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We show the geometric origin ot the nonlinear heat equation with arctangential nonlinearity: $\partial_t D = \Delta(\arctan D)$ by deriving it, together and in duality with the mean-curvature flow equation, from the minimal surface equation in Minkowski space, through a suitable quadratic change of time. We also show that, written in non-conservative form and properly discretized, this arctangential heat equation might be a useful tool for image processing and data analysis.