

# Anisotropic PDE-Based Evolution Processes for Matrix Fields

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## **Abstract**

There are some well-established anisotropic filters for scalar images based on partial differential equations (PDEs), notably, coherence enhancing diffusion filters, but also adaptive morphological filters induced by anisotropic dilation and erosion. In this talk we discuss a general framework that allows for an efficient transfer of these filters to fields of symmetric matrices. This encompasses an appropriate matrix-valued PDE-formulation as well as proper numerical solution schemes. In numerical experiments on real and synthetic 3D data we explore the performance of the matrix-valued counterparts of the aforementioned filters.