Geometric Integration and Numerical Analysis on Symmetric Spaces

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Symmetric spaces are spaces equipped with a symmetric product. In differential geometry, prime examples are spheres, hyperbolic spaces and Grassman manifolds. Together with Reinout Quispel and Antonella Zanna, we have explored many properties of spaces with a symmetric product, in works going back two decades. After a brief survey of this body of work, I will discuss a new canonical numerical time integration algorithm on symmetric spaces and discuss recent work on understanding the algebras of canonical connections on symmetric spaces, torsion free, with constant curvature, where the goal is to develop a theory of B-series on symmetric spaces.

Joint work with Jonatan Stava, University of Bergen.