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Variationality and Finsler metrizability of nonmetric autoparallels

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In alternative theories of gravity, particles may follow either Riemannian geodesics or non-Riemannian autoparallels, depending on the presence of a geometry-matter coupling via hypermomentum. Typically, autoparallels associated with connections that have nonmetricity are not derived from a variational principle. In this talk, we take the first steps toward finding a Finslerian variational principle, by rewriting the autoparallel equation as a Finslerian geodesic. Specifically, we provide the first steps toward constructing a Finsler (α, β) Lagrangian, which metrizes certain connections with vectorial nonmetricity.

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