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Title: The Finsler geometry of the rotating Kepler problem

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We investigate the Cartan and Finsler geometry of the rotating Kepler problem, a limit case of the restricted three body problem that arises if the mass of the one of the primaries goes to zero. We show that the Hamiltonian for the rotating Kepler problem can be regarded as the Legendre transform of a certain family of Finsler metrics on the two-sphere. For very negative energy levels, these Finsler metrics are close to the round metric, and the associated flag curvature is hence positive. On the other hand, we show that the flag curvature can become negative once the energy level becomes sufficiently high.

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