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Title: Volume form and its applications in Finsler geometry

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We establish some volume comparison theorems for general volume forms, and they reduce to the same formulas as Riemannian case for extreme volume form (the maximal or minimal volume form) up to a cofactor. By using the extreme volume form, we are able to generalize Calabi–Yau's linear volume growth theorem, Milnor's results on curvature and fundamental group to Finsler manifolds. We also derive some McKean type estimations of the first eigenvalue for complete noncompact Finsler manifolds. Our results indicate that the extreme volume form is a good choice in comparison technique in Finsler geometry.

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