Student Geometry Seminar

國立清華大學數學系 學生幾何研討會

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講題 Ground states for aggregation–diffusion models on Cartan–Hadamard manifolds

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Abstract

We consider an aggregation-diffusion energy on Cartan–Hadamard manifolds with sectional curvatures that can grow unbounded at infinity. The energy corresponds to a macroscopic aggregation model that involves nonlocal interactions and linear diffusion. We establish necessary and sufficient conditions on the growth at infinity of the attractive interaction potential for ground states to exist. Specifically, we derive explicit conditions on the attractive potential in terms of the bounds on the sectional curvatures at infinity. To prove our results we establish a new logarithmic Hardy–Littlewood inequality for Cartan–Hadamard manifolds of unbounded curvature.

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