

Title: A decentralised strategy for collision avoidance of multi-agent systems on a Riemannian manifold.

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Abstract: In this poster we introduce a variational approach for decentralised collision avoidance of multiple agents evolving on a Complete Riemannian manifold and we derive necessary conditions for extremals. The problem consists on finding non-intersecting trajectories of a given number of agents only sharing the information of relative positions with respect to their nearest neighbors, among a set of admissible curves, to reach a specified configuration, based on minimising an energy functional. The energy functional depends on velocities, covariant acceleration and a repulsive potential used to prevent collision among the agents. We finally formulate the problem of global existence of extrema for the energy functional considered in the collision avoidance problem.