Flocking in a New Discrete-Time and Discrete-State Cucker-Smale Model

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Abstract

Collective motions can be often observed in nature and experiments. Until now, several models have been proposed to explain these. In this talk, we introduce a new discrete-time and discrete-state flocking model based on the Cucker-Smale one. We then derive some sufficient conditions to assert the occurrence of flocking d ynamics. Roughly speaking, it happens when the communicate rate is less than or equal to some critical value. Some numerical simulations to support our theoretical results are also provided.