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Long-range in a system of thermal brownian particles¹ ALEXANDRO HEIBLUM, Posgrado Ciencias Fisicas, Universidad Nacional Autonoma de Mexico, FRANCISCO SEVILLA, Instituto de Fisica, Universidad Nacional Autonoma de Mexico, VICTOR DOSSETTI, Instituto de Fisica, Benemerita Universidad Autonoma de Puebla — We present a model that exhibits an order-disorder phase transition in two spatial-dimensions. The model considers a collection of N thermal Brownian particles moving in a square of length L subjected to periodic boundary conditions and to velocity-alignment forces. The alignment force affects only the velocity direction in a way that it makes it equal to the velocity direction of the nearby group. Our results contrast with those obtained from the well known model of Vicsek *et al.* [Phys. Rev. Lett. **75**, 1226 (1995)] where such a transition occurs out of equilibrium.

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