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On self-organized dynamics over domains with boundaries

Systems of interacting particles are widely used to establish different mathematical models describing collective behaviors of organisms and social aggregations. In this talk, we focus on such self-organized dynamics over domains with boundaries, which are commonly involved in realistic physical settings. For example, the boundary can be an obstacle in the environment, such as a river or the ground. Our research contributions include the mean-field limit for the particle system with reflecting boundary condition and the zero-diffusion limit from the aggregation-diffusion model to the plain aggregation model.