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Partial Differential Equations in the Modeling of Collective Phenomena

Control of Collective Phenomena Using Meanfield Limits

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Abstract: We study PDEs arising in the meanfield limit of controlled systems. As example we consider a system describing opinion formation for large populations. Within the model each individual agent has the possibility to adjust his opinion according to his own cost functional. The arising optimization models are solved using model-predictive control. The derived control laws are then studied in the limit of large populations of agents. The corresponding kinetic equation is analysed and numerical results are presented. The work is partly joined work with P. Degond and J.-G. Liu.