

OPINION FORMATION MODELS WITH HETEROGENEOUS PERSUASION AND ZEALOTRY

In this work we propose an opinion formation model with heterogeneous agents. We assume that they have different power of persuasion, and each agent has its own level of zealotry, that is, an individual willingness to being convinced by other agent. Also, we include zealots or stubborn agents that never change opinions.

We derive a Boltzmann-like equation for the distribution of agents on the space of opinions, and we approximate it with a transport equation with a nonlocal drift term. We study the long-time asymptotic behavior of solutions, characterizing the limit distribution of agents, which consists of the distribution of stubborn agents, plus a delta function at the mean of their opinions, weighted by their power of persuasion.

Moreover, we present explicit bounds on the rate of convergence, and we show that the time to convergence decreases when the number of stubborn agents increases. This is a striking fact observed in agent based simulations in different works.

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