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Non-conservative kinetic exchange model of opinion dynamics with randomness and bounded confidence

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The concept of a bounded confidence level is incorporated in a nonconservative kinetic exchange model of opinion dynamics model where opinions have continuous values $\in [-1,1]$. The characteristics of the unrestricted model, which has one parameter λ representing conviction, undergo drastic changes with the introduction of bounded confidence parametrised by δ. Three distinct regions are identified in the phase diagram in the $\delta-\lambda$ plane and the evidences of a first order phase transition for $\delta \geq 0.3$ are presented. A neutral state with all opinions equal to zero occurs for $\lambda \leq \lambda_{c_1} \simeq 2/3$, independent of δ, while for $\lambda_{c_1} \leq \lambda \leq \lambda_{c_2}(\delta)$, an ordered region is seen to exist where opinions of only one sign prevail. At $\lambda_{c_2}(\delta)$, a transition to a disordered state is observed, where individual opinions of both signs coexist and move closer to the extreme values (± 1) as λ is increased. For confidence level $\delta < 0.3$, the ordered phase exists for a narrow range of λ only. The line $\delta = 0$ is apparently a line of discontinuity and this limit is discussed in some detail.

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