Wealth per capita in inhomogeneous wealth distributions model of self-organized hierarchies MARCELO CASTILLO-MUSSOT, GERARDO NAUMIS, LUIS PEREZ, GERARDO VAZQUEZ-FONSECA, Instituto de Fisica, UNAM, Mexico — A simple model explained the emergence of social hierarchies through fighting and randomness, and a phase transition between an egalitarian and an hierarchical society was found when the past fights are not forgotten fast enough [1]. Here we include in the model inhomogeneous wealth (water, food, oil, etc.) in the 2D lattice. Agents move randomly except when a preferred rich rich site is nearby. A strong dependence of the global inequality on the distribution of wealth is found, specially in the case when the density of the agents is small. Therefore, the overall phase diagram for the first-order transition between egalitarian and hierarchical societies does change much by inclusion of preferred sites. For low densities of agents with a poor distribution of wealth, it is found that the wealth per capita does not reach its maximum value due to lack of global information of the agents.
[1] A. O. Sousa and D. Stauffer, Int. J. Mod. Phys. C, **11**, 1063 (2000).

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