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**Self-organization of divided hierarchy** TAKASHI ODAGAKI, KEIGO KITADA, KENTA OMIZO, Tokyo Denki University, RYO FUJIE, The University of Tokyo — There are two types of extreme form of hierarchy, one is the plutonomy where small fraction of winners and losers and many people in the middle class appear and the other a divided hierarchy where half of population become winners and the remaining half become losers. We study the emergence of the divided hierarchy in a model society which consists of bellicose individuals who always try to fight and fight with the strongest neighbor and pacific individuals who always try not to fight and when necessary fight with the weakest neighbor. In our model society, (1) individuals make random walk on a square lattice, (2) when two individuals encounter they fight each other and (3) the winner deprives wealth from the loser. By a Monte Carlo simulation, we show that there are two transitions when the population density is increased; one is a transition from the egalitarian society to a hierarchical society I where winners, losers and middle classes coexist and the other is a transition from the hierarchical society I to a hierarchical society II where winners and losers exist but no middle classes exist, that is the divided hierarchy. We also show that clusters consisting mostly of bellicose individuals appear in the hierarchical society I.

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