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Spatially clustered zealots in a two-dimensional voter model THOMAS STONE, Husson University, MATTHEW LUDDEN, SUSAN MCKAY, University of Maine — The voter model, solvable in all dimensions in its standard form, has been extensively used to study behavior dynamics by using the tools of statistical mechanics. Recently, much work has been focused on determining the effects of zealots in the voter model, where a zealot is an agent that maintains its opinion (akin to an Ising spin variable) no matter the local environment. Here we investigate the effects of spatially clustered zealots in the standard voter model on a two-dimensional square lattice. The clustering of zealots is quantified by the conditional probability that a zealot of the +1 state appears on an adjacent site to a randomly chosen zealot. (All zealots are of the +1 state.) We determine the functional forms of the system consensus time with respect to system size, clustering, and zealot density, and compare these findings to previous results that do not include clustering. We also discuss an interesting random walk problem that arises when one attempts to calculate how clustering affects the consensus time for fixed zealot density and system size.

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