Discontinuous percolation transition with full step order parameter jump HYUN KEUN LEE, University of Seoul, HYUNGGYU PARK, Korea Institute for Advanced Study, JAE DONG NOH, University of Seoul, PARK COLLABORATION, NOH COLLABORATION — We demonstrate that there is a class of discontinuous percolation that is characterized by full step jump in order parameter at threshold $p_c = 1$. Such a percolation takes place in the infinite dimension if the critical exponent τ, the decay exponent of the cluster number density distribution in critical regime, holds $1 < \tau \leq 2$. The scaling relations of $\sigma = 2 - \tau$ and $\gamma = 1/\sigma$ are derived for the critical exponents σ and γ associated with the characteristic cluster size and with the susceptibility, respectively. We also show that the cluster number density distribution is compact and can be widened up to $\sim \sqrt{N}$ for system size N.

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