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Explosive percolations on a two-dimensional lattice and bond-site duality WOOSIK CHOI, SOON-HYUNG YOOK, YUP KIM, Department of Physics and Research Institute for Basic Sciences, Kyung Hee University, Seoul 130-701, Korea — The site and bond explosive percolation models are carefully defined and studied on a square lattice. From the cluster distribution function and the behavior of the second largest cluster, it is shown that the duality in which the transition is discontinuous exists for the pairs of the site model and the corresponding bond model which relatively enhances the intra-bond occupation. In contrast the intra-bond-suppressed models which have no corresponding site models undergo the continuous transition and satisfy the normal scaling ansatz as ordinary percolation.

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