

Abstract Submitted  
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**Hybrid percolation transition in complex networks** BYUNGNAM

KAHNG, Seoul National University — Percolation has been one of the most applied statistical models. Percolation transition is one of the most robust continuous transitions known thus far. However, recent extensive researches reveal that it exhibits diverse types of phase transitions such as discontinuous and hybrid phase transitions. Here hybrid phase transition means the phase transition exhibiting natures of both continuous and discontinuous phase transitions simultaneously. Examples include  $k$ -core percolation, cascading failures in interdependent networks, synchronization, etc. Thus far, it is not manifest if the critical behavior of hybrid percolation transitions conforms to the conventional scaling laws of second-order phase transition. Here, we investigate the critical behaviors of hybrid percolation transitions in the cascading failure model in inter-dependent networks and the restricted Erdos-Renyi model. We find that the critical behaviors of the hybrid percolation transitions contain some features that cannot be described by the conventional theory of second-order percolation transitions.

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