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Linyuan Lu and **Xing Peng***, Department of Mathematics, University of California, San Diego, La Jolla, CA 92093. *High order phase transition in random hypergraphs.*

Given an r -uniform hypergraph, we define the s -th-order connected component and the giant s -th-order connected component for each $1 \leq s \leq r - 1$. Let $H^r(n, p)$ be the random r -uniform hypergraph with the vertex set $[n]$, where each r -set of $[n]$ is included as an edge independently with probability p . We determine the threshold for the existence of the giant s -th-order connected component for each $1 \leq s \leq r - 1$; we also manage to give the size of the largest s -th-order connected component in the supercritical phase and the subcritical phase. For the case $s = 1$, there are some results on the uniform model $H_{n,m}^r$ due to Schmidt-Pruzan and Shamir; Karoński and Łuczak. Our result agrees with previous known results for the case $s = 1$. This is joint work with Linyuan Lu. (Received February 24, 2013)