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**Random field Ising model on networks with inhomogeneous connections** SANG HOON LEE, HAWOONG JEONG, KAIST, Daejeon 305-701, Korea, JAE DONG NOH, University of Seoul, Seoul 130-743, Korea — We study a zero-temperature phase transition in the random field Ising model on scale-free networks with the degree exponent  $\gamma$ . Using an analytic mean-field theory, we find that the spins are always in the ordered phase for  $\gamma < 3$ . On the other hand, the spins undergo a phase transition from an ordered phase to a disordered phase as the dispersion of the random fields increases for  $\gamma > 3$ . The phase transition may be either continuous or discontinuous depending on the shape of the random field distribution. We derive the condition for the nature of the phase transition. Numerical simulations are performed to confirm the results.

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