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**Gaoran Yu\*** (gyu9@jhu.edu), 103 W 39th St, Apt F3, Baltimore, MD 21210, and **John C. Wierman**. *Rigorous Upper Bounds for Bond Percolation Thresholds of 3D Lattices*.

We introduce a growth process approach that provides upper bounds for bond percolation thresholds of 3D lattices. The approach views the open cluster of the configuration of a 3D lattice as a dynamic process. Projecting the 3D process onto a carefully chosen plane results in a projected process on a 2D lattice. The projected process is then related to a canonical bond percolation model on the same 2D lattice by comparing their corresponding probability measures using “step-wise” stochastic ordering. Subsequently, we derive the percolation threshold of the 3D lattice from that of the 2D lattice.

Using this approach, we determined upper bounds for the bond percolation thresholds of the simple cubic lattice, the BCC lattice and the FCC lattice, which are 0.34730, 0.27455 and 0.19333, respectively. The approach can also be applied to stacked lattices.

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