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Random Close Packing of Disks and Spheres in Confined Geometries KENNETH DESMOND, ERIC R. WEEKS, Emory University — We study the structure of many simulated random closing packings confined between two walls. Each packing consists of a binary mixture in equal number with a sizes ratio of 1.4. Our aim is to quantify how a confining boundary and the thickness between the boundaries alters the structure of randomly close packed disks in 2D and spheres in 3D. We find that confinement lowers the packing fraction, and induces heterogeneity in particle density where particles show strong layering near the wall. Both the particle density and the structure of the local packing show oscillations that decay outward from the wall. The decay in the oscillations is rapid, with a characteristic length scale on the order of the largest particle diameter. We invoke a simple model to describe the decrease in packing fraction with confinement.

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