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## The impact of shape's polyhedral symmetry breaking on packing density

When studying packings of objects one observes the dependence of packing density on various factors, the symmetry of particles included. For example, the packings of ellipsoids can be denser than the packings of spheres, which represents the general trend in a transition between two continuous symmetries. Here, our main goal was to check, whether a similar effect can be observed for shapes of polyhedral point symmetries. The packing model chosen was random sequential adsorption of two-parameter family of polyhedra created by cutting the vertices of a cube, which exposes the transition from tetrahedral to octahedral symmetry. The RSA protocol consists in sequential steps, where:

- position and orientation of a new particle are selected randomly,
- if the particle does not intersect with any of previously placed objects it is added to the packing; otherwise, it is removed and abandoned.

Moreover, as RSA preserves the non-overlapping criterion, the model allowed us to evaluate how the results correlate with excluded volume effects.

### Summary

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