Erratum: Dense packings of polyhedra: Platonic and Archimedean solids [Phys. Rev. E 80, 041104 (2009)]

S. Torquato and Y. Jiao

(Received 2 April 2010; published 22 April 2010)

DOI: 10.1103/PhysRevE.81.049908 PACS number(s): 05.20.Jj, 45.70.−n, 61.50.Ah, 99.10.Cd

In the abstract, and pages 2, 3, 11, and 15, it was stated that the truncated tetrahedron is the only Archimedean solid that is not centrally symmetric. The correct statement is that the truncated tetrahedron is the only *nonchiral* Archimedean solid that is not centrally symmetric. This subtle distinction does not affect any of the results, conclusions, or conjectures in our paper, but it does warrant some further explanation.

Two of the Archimedean solids, the snub cube and snub dodecahedron, are *chiral* objects, i.e., each of them has a nonsuperposable mirror image and thus each has a left-handed and right-handed form (see Figs. 1 and 2). Thus, they are not centrally symmetric. However, these two solids possess parallel faces that enable a large number of face-to-face contacts in lattice packings as do the other centrally symmetric Platonic and Archimedean solids. Therefore, it is possible that their optimal lattice packings are the densest packings. However, even if this not true, it does not contradict Conjecture 2 stated in the paper because it only applies to the centrally symmetric Platonic and Archimedean solids.

In Table IV, the values of v_p, r_{in}, and r_{out} for A5 and A6 should be interchanged; the values of v_p, r_{in}, and r_{out} for A7 and A9 should be interchanged. In addition, the values 3.523154 and 2.016403 should be 3.440955 (i.e., $\frac{1}{2}\sqrt{25+10\sqrt{5}}$) and 2.064573 (i.e., $\frac{3}{2}\sqrt{1+\frac{2}{5}\sqrt{5}}$), respectively.

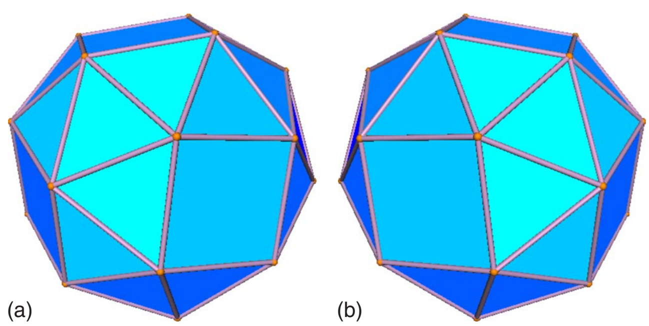

FIG. 1. (Color online) The two chiral forms of the snub cube A3 (a) and A3′ (b). Note that the densities of the corresponding optimal lattice packings for these chiral forms are identical, and thus the optimal density reported in the paper for A3 applies to both packings.

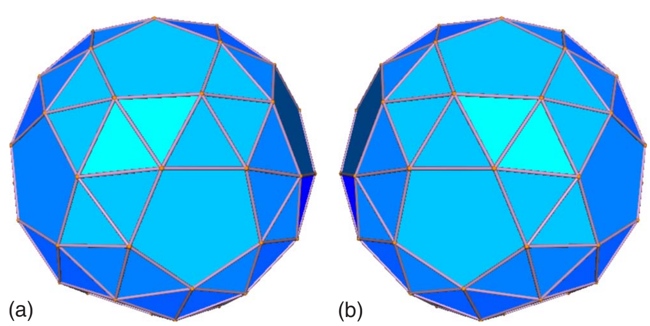

FIG. 2. (Color online) The two chiral forms of the snub dodecahedron A4 (a) and A4′ (b). Note that the densities of the corresponding optimal lattice packings for these chiral forms are identical, and thus the optimal density reported in the paper for A4 applies to both packings.

