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**Squares of spheres: capillarity-induced ordering of spherical colloids on an interface with anisotropic curvature** JASPER VAN DER GUCHT, Wageningen University, The Netherlands, DMITRY ERSHOV, Wageningen University — Objects floating at a liquid interface, such as breakfast cereals floating in a bowl of milk or bubbles at the surface of a soft drink, clump together in space-saving hexagons to minimize the disruption of the liquid interface. Micrometer-sized colloidal particles embedded in a liquid interface normally do not disrupt the interface, so that such clustering does not occur. Here, we show that this is different when the interface has a curvature that is anisotropic. We find that in this case the condition of constant contact angle along the three-phase contact line can only be satisfied when the interface is deformed. We present experiments and numerical calculations that demonstrate how this leads to quadrupolar capillary interactions between the particles, giving rise to organization into regular square lattices. We demonstrate that the strength of the governing anisotropic interactions can be rescaled with the deviatoric curvature alone, irrespective of the exact shape of the liquid interface. Our results suggest that anisotropic interactions can easily be induced between isotropic colloids through tailoring of the interfacial curvature.

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