Efficient 2D Simulation on Moving 3D Surfaces

Supplementary Material

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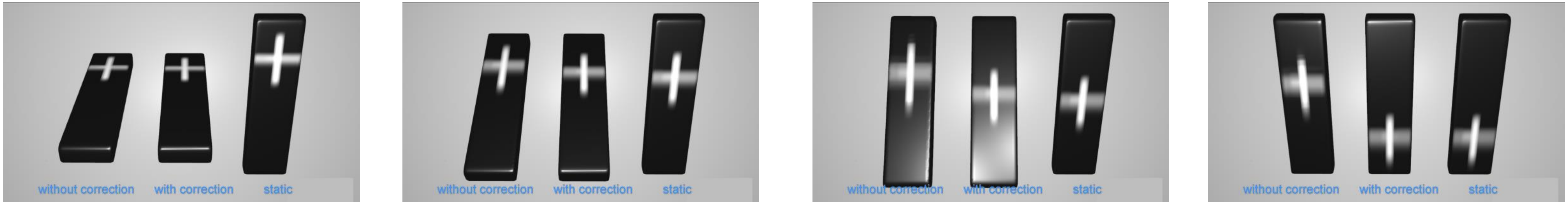

To demonstrate the effect of our vector length conservation from Eq.5, we performed an experiment with a rotating surface, where we initialized the surfactant with a tangential velocity, and then rotated the surface 90 degrees. We simulated the surface with and without the length correction and a static surface as a reference side-by-side. Without length correction, the surface simulation shows much lower speeds of the imposed simulation and even stops in the middle of the surface; in the corrected version, the velocity is preserved during the rotation and matches the static surface.

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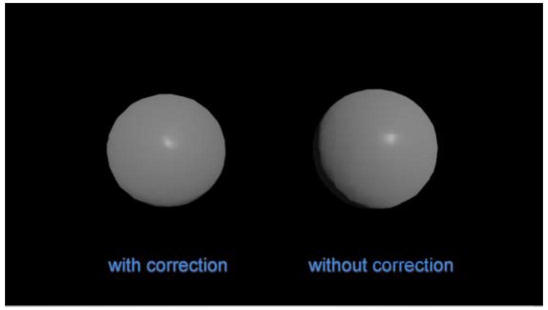

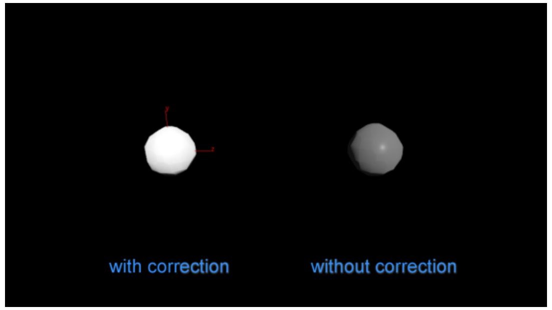

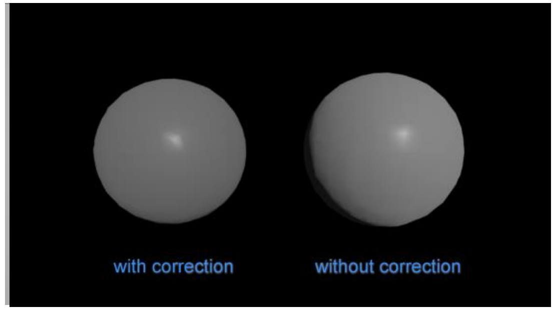

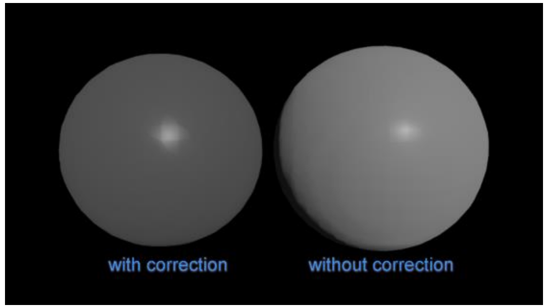

A hand-animated sphere with a periodically oscillating radius was used to test our approach to mass conservation. On the left is the sphere with mass conservation. When the sphere is shrinking, the density on the sphere is increasing. When the sphere grows, the density is decreasing. The sphere without correction has a constant density that does not react to changes of the surface area.