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Velocity Slip on Curved Surfaces WEIKANG CHEN, RUI ZHANG, JOEL KOPLIK, City College of New York — The Navier boundary condition for velocity slip on flat surfaces, when expressed in tensor form, is readily extended to surfaces of any shape. We test this assertion using molecular dynamics simulations of flow in linear channels with flat and curved walls and for rotating cylinders and spheres, all for a wide range of solid-liquid interaction strengths. We find that the slip length as conventionally measured at a flat wall in Couette flow is the same as that for all other cases with curved and rotating boundaries, provided the atomic interactions are the same. These results support the idea that the slip length is a material property, transferable between different flow configurations.

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