# Curvature effects on surface nematic flows

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**Abstract.** We analyse the effects that a curved boundary induces on the flow of a nematic liquid crystal. As a first result, we show that it is not possible to decouple the motion equations for the director and the macroscopic velocity. Furthermore, the curvature of the external surface modifies the surface viscosity. The sign of this correction depends both on the concavity of the surface and the sign of the Leslie coefficients $\alpha_2$ and $\alpha_3$. In particular, we show that in materials that align in shear the correction of the surface viscosity changes sign depending on whether the angle between the director and the radial direction exceeds or not a critical value.