Beitrag ID: **21** Typ: **Poster**

Gradient Dynamics Model for Liquid Drops on Elastic Substrates - Capturing prominent Soft Wetting Phenomena using a simplified Approach

Montag, 5. Dezember 2022 16:00 (2 Stunden)

We investigate the behaviour of liquid drops on elastic substrates employing a simplified formulation of elasticity corresponding to the Winkler foundation model. By using a gradient dynamics approach we obtained a versatile and numerically less expensive model allowing for the treatment of statics and dynamics of both single drops as well as large drop ensembles. While a previous version has been used to qualitatively recover basic phenomena of soft wetting, like the double transition of contact angles and viscoelastic breaking [1], we recently extended the model to incorporate horizontal displacement as well as surface elasticity. In the course of that the impact of the Shuttleworth effect has been studied for different symmetry scenarios and compared to a macroscopic neo-Hookean model wich proper treatment of bulk elasticity in a large-deformation framework [2].

[1] Henkel C., Snoeijer J. H., Thiele U. 2021 Gradient-dynamics model for liquid drops on elastic substrates. Soft Matter 17, 10359–10375, DOI: 10.1039/d1sm01032h

[2] Henkel C., Essink M. H., Hoang T., van Zwieten G. J., van Brummelen E. H., Thiele U., Snoeijer J. H. 2022 Soft wetting with (a)symmetric Shuttleworth effect. Proc. R. Soc. A 478: 20220132. DOI: 10.1098/rspa.2022.0132

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Sitzung Einordnung: Poster Session