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Wetting problems with advanced computational techniques

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Wetting is a captivating class of phenomena whose study intertwines physics, chemistry, and engineering. Macroscopically, a droplet's tendency to wet a solid can be fully described in terms of its surface tension and equilibrium contact angle, that is the angle formed at the interface between the solid, liquid, and gas phases. However, when spreading processes are considered, molecular interactions start playing an important role, making an unambiguous description hard to achieve.

To tackle this problem, we develop a mesoscopic computational method based on the immersed boundary lattice Boltzmann (IBLB) method and validate it against analytical solutions and known experimental results in equilibrium and spreading scenarios.

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