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Cylindrical phase of diblock copolymers in thin films MARIANNE BREUER, BARBARA DROSSEL, Technical University of Darmstadt — We investigate the microphases of diblock copolymers confined in a thin film with walls attracting one of the monomer types. We focus on the possible structures of copolymers that form cylindrical phases in the bulk. We employ both self-consistent field theory and strong segregation theory to obtain the concentration profile minimizing the free energy of the system and to compare the free energy of possible morphologies. We present a phase diagram showing the possible microphases for a diblock copolymer with fixed volume fraction and fixed segregation parameter in dependence of the film thickness and the affinity of the walls. We study the effects of numerical inaccuracies on the appearance of different morphologies and their free energies.

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