Strong Polyelectrolyte Brushes: A self-consistent field theory study GABRIELE MIGLIORINI, MARK MATSEN, Department of Mathematics, Reading University — We investigated the properties of a polyelectrolyte brush system by means of self-consistent field theory. We considered the case of a polyelectrolyte system grafted to both a similarly and oppositely charged surface, in the presence of counter-ions. The properties of the system are described, in the weakly charged limit, by saddle point equations, that couple a modified diffusion equation to the one-dimensional Poisson-Boltzmann equation, describing the electrostatic field in the system. A systematic, numerical study of this set of equations is presented and comparison is made with previous studies. Possible extensions to different grafting geometries are suggested and throughout discussed.

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