Quantitative analysis of boundary layers in periodic homogenization of Neumann problems

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Abstract. This talk is concerned with periodic homogenization of linear elliptic equations (or systems) in divergence form with oscillating Neumann data of first order (the results of Dirichlet problem will also be included). We assume both the coefficients and boundary data are $\varepsilon$-periodic and therefore rapidly oscillating. This boundary layer problem arises in the study of the higher-order convergence rates in periodic homogenization. Recently, it has been known that this problem admits homogenization if the domain is uniformly convex (and smooth). In this talk, I will present the most recent progress on this problem, including the almost sharp convergence rates and the almost Lipschitz regularity of the homogenized boundary data.