1135-35-1285 **Jinping Zhuge*** (jinping.zhuge@uky.edu). *Quantitative analysis of boundary layer in periodic homogenization.*

In this talk, we present a quantitative analysis for Neumann problem of the second-order elliptic system with first-order periodically oscillating data:

$$\begin{cases} -\dfrac{\partial}{\partial x_i}\Big\{a_{ij}\Big(\dfrac{x}{\varepsilon}\Big)\dfrac{\partial}{\partial x_j}u_\varepsilon(x)\Big\} = 0 & \text{in } \Omega, \\ \qquad\qquad\qquad \dfrac{\partial}{\partial \nu_\varepsilon}u_\varepsilon(x) = T_{ij}(x)\cdot\nabla\Big\{g_{ij}\Big(x,\dfrac{x}{\varepsilon}\Big)\Big\} & \text{on } \partial\Omega, \end{cases}$$

where $\partial/\partial\nu_\varepsilon$ is the conormal derivative and $T_{ij} = n_i e_j - n_j e_i$ are tangent vector fields on $\partial\Omega$. The domain Ω is supposed to be bounded and uniformly convex (or of finite type). We identity the corresponding homogenized system and establish the nearly sharp rate of convergence in L^2 for both Dirichlet and Neumann problem. The regularity of the homogenized boundary data will also be emphasized. This is a joint work with Zhongwei Shen. (Received September 20, 2017)