We present some results in collaboration with E. Jose and D. Onofrei concerning the problem of well posedness and homogenization for a multiscale parabolic problem in a cylinder $Q$. A rapidly oscillating non-smooth interface inside $Q$ separates the cylinder in two heterogeneous connected components. The interface has a periodic microstructure and it is situated in a small neighborhood of a hyperplane which separates the two components. The problem models a time-dependent heat transfer in two heterogeneous conducting materials with an imperfect contact between them. At the interface, we suppose that the flux is continuous and that the jump of the solution is proportional to the flux. On the exterior boundary, homogeneous Dirichlet boundary conditions are prescribed. The peculiarity of this time dependent problem is apparent in the lack of regularity for the time-derivative of the solution which further complicates the homogenization procedure in general, and in particular the identification of the initial data. This is overcome by proving a suitable compactness result. We also derive a corrector result showing the accuracy of our approximation in the energy norm.

Mittwoch, 13.11.2019, 17:00 Uhr - Willers-Bau B 321
Leitung: Prof. Dr. Ralph Chill