Abstract:
The talk addresses error estimates for partial di erential equations with coe cients that are not exactly "-periodic, where " > 0 denotes the ratio between the microscopic and the macroscopic length scale. The rst part is devoted to the derivation of quantitative estimates for linear elliptic equations where the ellipticity may degenerate with order $O("^{2\ })$. It is shown that for = 0 and = 1 the error between the original solution and the e ective solution is of order $O("^{1=2})$. Therefore suitable test functions are constructed via the periodic unfolding method and a gradient folding operator making only minimal additional assumptions with respect to the macroscopic scale on the given data and the e ective solution. In the second part we generalize the obtained error estimates to parabolic equations.