ON ANISOTROPIC SINGULAR PERTURBATIONS PROBLEMS

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Let $\Omega = (-1,1)^2$. We would like to study the asymptotic behaviour of problems whose model could be

$$\begin{cases} -\epsilon\partial^2_{x_1} u_\epsilon - \partial^2_{x_2} u_\epsilon = f \quad \text{in } \Omega, \\ \\ u_\epsilon = 0 \quad \text{on} \quad \partial\Omega, \end{cases}$$

when $\epsilon \to 0$ and show in particular that the solution converges toward the solution of the problem in lower dimension

$$\begin{cases} -\partial^2_{x_2} u_0 = f \quad \text{in } (-1,1), \\ \\ u_0 = 0 \quad \text{on} \quad \partial(-1,1). \end{cases}$$

(Joint work with S. Guesmia).