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Various kinds of sensitive singular perturbations. (English) Zbl 1153.35011
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This paper concerns singularly perturbed abstract linear equations in variational form. The results are applied to boundary value problems for PDEs having highly pathological asymptotic behavior such that the limit problems are out of classical PDE theory (because the limit bilinear forms are continuous and coercive on very large spaces, not contained in distribution spaces, only). Two examples from this shell theory are presented. The highly pathological asymptotic behavior of the first (resp. second) example comes from a boundary condition not satisfying the Shapiro-Lopatinski condition (resp. from an edge in the shell).

The paper is mainly a review of the authors' previous results. It includes interesting remarks and comments, in particular on spaces of analytical functionals (out of distribution spaces) and on complexification.

Reviewer: [Lutz Recke \(Berlin\)](#)

MSC:

[35B25](#) Singular perturbations in context of PDEs
[35G15](#) Boundary value problems for linear higher-order PDEs
[46F15](#) Hyperfunctions, analytic functionals
[74K25](#) Shells

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