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Abstracts of Short Communications and Posters

Section:

17. Control Theory and Optimization

1991 MS Classification: 49J20, 49K20, 49K30

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Recent Progress in the Analysis and Optimization of Plates

We consider fourth order elliptic equations in arbitrary space dimension together with various boundary conditions. In dimension one or two this describes the deflection of a (simply supported, clamped, cantilevered. ..) beam or plate. We propose a factorization of the differential operator which puts into evidence a new compactness property and a new approximation technique via first order finite elements. For the associated opti mization problems (thickness minimization, coefficients identifi cation) our approach yields convexity properties, uniqueness of the global minimum, new existence results. We also discuss optimality conditions and show that, in two clas sical situations, the optimal control has a bang-bang structure.