

ON A HINGED PLATE EQUATION OF NONCONSTANT THICKNESS

CRISTIAN-PAUL DANET

Abstract. This note is concerned with the problem of existence and uniqueness of solutions for a fourth order boundary value problem that models the deflection of a hinged plate of nonconstant thickness.

Mathematics subject classification (2010): 35J35, 35J40, 74K20.

Keywords and phrases: Fourth order, plate theory.

REFERENCES

- [1] M. S. BERGER, *Nonlinearity and Functional Analysis. Lectures on Nonlinear Problems in Mathematical Analysis*, Academic Press, 1977.
- [2] D. BUOSO, P. LAMBERTI, *Shape deformation for vibrating hinged plates*, Math. Methods Appl. Sci. **37**, 2 (2014), 237–244.
- [3] C.-P. DANET, *Two maximum principles for a nonlinear fourth order equation from thin plate theory*, Electron. J. Qual. Theory Differ. Equ. **31**, (2014), 1–9.
- [4] F. GAZOLLA, H.-C. GRUNAU, G. SWEERS, *Polyharmonic Boundary Value Problems*, Springer Verlag, 2010.
- [5] D. GILBARG AND N. S. TRUDINGER, *Elliptic Partial Differential Equations of Second Order*, Springer Verlag, 2001.
- [6] O. A. LADYZHENSKAYA, *The Mathematical Theory of Viscous Incompressible Flow*, Gordon and Breach Science Publishers, 1969.
- [7] S. A. NAZAROV, A. STYLIANOU, G. SWEERS, *Hinged and supported plates with corners*, Z. Angew. Math. Phys. **63**, 5 (2012), 929–960.
- [8] S. A. NAZAROV, G. SWEERS, *A hinged plate equation and iterated Dirichlet Laplace operator on domains with concave corners*, J. Differential Equations **233**, 1 (2007), 151–180.
- [9] E. PARINI, A. STYLIANOU, *On the positivity preserving property of hinged plates*, SIAM J. Math. Anal. **41**, 5 (2009), 2031–2037.