

# The clamped plate equation and positivity

Anna Dall'Acqua  
Technical University of Munich.

A partial differential equation has the positivity preserving property if a positive source term leads to a positive solution. The clamped plate equation

$$\begin{cases} \Delta^2 u = f & \text{in } \Omega, \\ u = \frac{\partial}{\partial \nu} u = 0 & \text{on } \partial\Omega, \end{cases}$$

does not have this property in general planar domains. We will present some examples of convex and non-convex domains on which it holds. Moreover, we show that the solution operator for the clamped plate equation in two-dimensional regular bounded domains can be split in a positive part and a possible negative part which both satisfy the Dirichlet boundary condition. The positive part contains the singularity and the other inherits the full regularity of the boundary.