

NODAL AND MINIMAL PARTITIONS FOR FLAT TORI

CORENTIN LÉNA

ABSTRACT. We are interested in the eigenfunctions of the Laplacian on a two-dimensional domain, which can be a bounded open set in \mathbb{R}^2 (in which case we impose a Dirichlet boundary condition), a surface in \mathbb{R}^3 or more generally an abstract two-dimensional manifold. The zero set of an eigenfunction is called the *nodal set*, and a connected component of its complement a *nodal domain*. A famous result, due to R. Courant, tells us that an eigenfunction associated with the k -th eigenvalue has no more than k nodal domains. We look for the eigenfunctions for which this bound is reached, in the simple case of the square torus. We also consider the related problem of spectral minimal partitions.

POST-DOC, UNIVERSITY OF TURIN, ITALY

E-mail address: `clena@unito.it`