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**Invitation to Seminar Talk**

# Spectral Minimal Partitions. Some results and open questions.


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### Host: Robert Seiringer


Abstract: Suppose $\Omega \subset \mathbb{R}^2$ is a bounded open set. We consider $-\Delta$ on $\Omega$ with Dirichlet boundary conditions. Take a $k$-partition $P_k$ of $\Omega$ into $k$ open sets $D_i$, $i = 1, \dots, k$. Consider $\lambda(D_i)$, the lowest Dirichlet eigenvalue of $-\Delta$ on $D_i$, and define $\Lambda(P_k) := \max_i \lambda(D_i)$. Let $\mathcal{P}_k(\Omega)$ be the family of all $k$-partitions of $\Omega$. We define the **k-th partition eigenvalue**

$$\mathfrak{L}_k(\Omega) = \inf_{P_k \in \mathcal{P}_k(\Omega)} \Lambda(P_k).$$

If the minimum is achieved for a $P_k$ then this partition is called a **spectral minimal partition**.

It turns out that the minimal partitions and the associated $\mathfrak{L}_k$ have many interesting properties and there are relations with the Dirichlet spectrum and the eigenfunctions of $-\Delta$ on $\Omega$. In particular there is a surprising relation between Courant's nodal domain and minimal partitions.

Some explicit examples for minimal partitions will be presented and problems and conjectures will be discussed.


# Thursday, 23 October 2014, 4:00pm

### Seminar Room Mondi 2, Central Building, 1st floor

2014-10-23

This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage (note that the IST Shuttle times are highlighted in dark green): http://ist.ac.at/fileadmin/user_upload/pdfs/IST_shuttle_bus.pdf
The IST Shuttle bus is marked IST Shuttle and has the Institute Logo printed on the side.