- **Ludewig, Matthias: Atomic Limit and Hilbert Modules (SR1 c)**
  A recent breakthrough in condensed matter physics was the discovery of so-called topological insulators. These are materials for which a topological non-triviality in their mathematical description forces them to behave „non-local" in a certain sense. We model this by a Riemannian manifold carrying a cocompact action of a discrete symmetry group G, together with a G-invariant Hamiltonian operator. The question is then whether a certain spectral subspace of $L^2(X)$ has a G-basis of rapidly decaying functions, called „Wannier functions". We show that this is equivalent to the (non-)triviality of the spectral subspace, when considered as a Hilbert module over the group C*-algebra $C^*_r(G)$. This is joint work with Guo Chuan Thiang.