

Titel: Zero modes of the Pauli operator**Abstract:**

For physical reasons one is interested in zero modes of the Pauli operator and, in particular, in the case where the magnetic field is minimal in some sense. This leads to a system of coupled equations for a spinor field and a vector field, which displays a conformal invariance and is scaling critical. We give a gentle introduction to the physical and mathematical background of this problem. The results that we present concern the existence of minimal solutions, their regularity and decay properties, as well as optimal size estimates.

The talk is based on joint work with Michael Loss.