

NYU
上海SHANGHAI
纽约大学NYU-ECNU
Institute of Mathematical Sciences
at NYU Shanghai

ANALYSIS/PDE SEMINAR SERIES

TOPIC: SINGULAR INSTANTONS

SPEAKER: Robert Sibner, City University of New York, Graduate Center and Brooklyn College

TIME: 1:45pm - 2:45pm, 9 October 2014

VENUE: Room 264, Geography Building, 3663 Zhongshan Road North, Shanghai (中山北路校区, 地理楼 264 室)

ABSTRACT OF THE TALK

The first part of this talk will be an expository overview of the gauge theory for the Yang-Mills and Yang-Mills-Higgs equations, describing instantons and monopoles respectively. After describing the equations and their relationship, we will try to say just a few words about their significance in high energy physics. We will then discuss the effect of non-trivial topology of the underlying space. In order to show the existence and classification of singular instantons on (Euclidean) 4-space we will turn to an investigation of monopoles on hyperbolic 3-space.

BIOGRAPHY

Robert J Sibner is Professor of Mathematics at Brooklyn College and on the Doctoral faculty at the Graduate center of CUNY in New York. Several years after obtaining his PhD at the Courant Institute of NYU (in the field of complex analysis) he began a long collaboration with his wife, Lesley M. Sibner. They proved a non-linear Hodge de-Rham theorem and a constructive PDE proof of the Riemann-Roch theorem. They studied the partial differential equations arising in gauge theory, investigating the removability of apparent point singularities in various cases and the classification of co-dimensional two singularities of connections by their holonomy. In 1989, with Karen Uhlenbeck, they disproved a long standing conjecture that all critical points of the Yang-Mills functional were minima. The subject of this talk was his final collaboration with his wife.