Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

Fakultät für
Mathematik, Informatik
und Naturwissenschaften

Kolloquium über Reine Mathematik

Einladung zu einem Vortrag

Dienstag, 28. November 2017

17 Uhr s.t., Geom H4

Prof. Dr. Chris Wendl
(Humboldt-Universität zu Berlin)

On symplectic manifolds with boundary, or "when is a Stein manifold merely symplectic?"

Abstract:

Many important developments in symplectic topology can be characterized as exploring the boundaries between "rigidity" and "flexibility". By rigidity, we mean e.g. classification and non-existence results that are inaccessible from topology alone; they are often based on powerful symplectic invariants defined via elliptic PDEs. On the flexible side, there are many problems in which symplectic structures appear important at first but turn out to be surprisingly irrelevant, so that all interesting invariants vanish and only homotopy theory remains. The topic of this talk is a recently discovered middle ground between these two extremes. We consider Stein manifolds, objects that originate in complex geometry but also carry natural symplectic structures, and are known in general to exhibit an even higher level of rigidity than symplectic manifolds. It turns out that in complex dimension 2, there is a large special class of Stein manifolds for which this is not the case: though not completely flexible, their Stein structures are fully determined by their symplectic structures, so that all complex geometry becomes surprisingly irrelevant. This result is based on a topological characterisation of Stein structures via Lefschetz fibrations, together with an analytical result presenting the latter as foliations by pseudoholomorphic curves. There will be lots of pictures, and some of them will move.

Vor dem Vortrag (ab 16.30 Uhr) stehen im Raum 327 Kaffee und Tee bereit.