

## **On contact topology, Symplectic Field Theory and the PDE that unites them**

**Chris Wendl**

*Humbolt University - Berlin*

The fields of symplectic geometry and contact geometry are often referred to as even and odd-dimensional "cousins". While a symplectic manifold can be viewed as the natural geometric setting for Hamiltonian mechanics, a contact manifold is essentially the restriction of that setting to a hypersurface of constant energy. In this talk I will discuss some of the basic topological questions regarding contact manifolds, and explain why these questions can be studied using a seemingly unrelated algebraic formalism in the style of a "topological quantum field theory". One of the main insights to emerge recently from this connection is the fact that contact manifolds admit varying "degrees of tightness", which give us information on their relationships to one other and to symplectic manifolds. I will also sketch some basics on the analytical technology in the background of all this, a nonlinear elliptic PDE whose solutions are called "pseudoholomorphic curves".