

**Title:** Open book decompositions, contact 3-manifolds and Legendrian knots

**Abstract:** Due to Alexander, it is well known that every closed oriented 3-manifold has an open book decomposition. In the first part of the talk, I will define open book decompositions of 3-manifolds and discuss various examples in detail. Further, we I will discuss the importance of the open books in manifold theory, in particular in contact geometry. A contact structure on an odd-dimensional manifold is a maximally non-integrable hyperplane field that vanishes nowhere. After a brief introduction to contact 3-manifolds, I will focus on a class of knots called Legendrian knots in contact 3-manifolds. A knot in a contact 3-manifold is called Legendrian if it is always tangent to the contact planes. I will discuss a new invariant for Legendrian knots which is defined using open book decompositions and discuss its applications.