

# Reeb vector fields and open book decompositions

KO HONDA

*University of Southern California*

According to a theorem of Giroux, there is a 1-1 correspondence between isotopy classes of contact structures and equivalence classes of open book decompositions. We prove that any contact structure  $(M, \xi)$  (in dimension 3) which is supported by an open book with periodic monodromy satisfies the Weinstein conjecture, namely any Reeb vector field  $R$  of  $(M, \xi)$  admits a closed orbit. The approach is to study holomorphic curves in the symplectization of  $(M, \xi)$  for a particularly nice Reeb vector field  $R$ , when  $\xi$  is universally tight with universal cover  $R^3$ . In such a case we show that the contact homology is cylindrical and nonzero. This is joint work with Vincent Colin.