

# CONVEX SURFACES AND RECTANGULAR DIAGRAMS

IVAN DYNNIKOV

This is a joint work with Maxim Prasolov.

We recently discovered a connection between convex surfaces with respect to the standard contact structure in  $S^3$  and rectangular diagrams of links. Namely, if  $S$  is a convex surface with Legendrian boundary, then its isotopy class can be represented in a nice way by using a simple combinatorial language naturally extending the formalism of rectangular diagrams, and vice versa. This language turns out to be an instance of normal surface formalism for a special family of triangulations of  $S^3$ .

We are particularly interested to answer the following question. Let  $A \subset S^3$  be an annulus such that  $A$  is tangent to the contact structure along the boundary  $\partial A$ . Is it true that the two components of  $\partial A$  are always equivalent Legendrian knots? We answer in the positive a simpler question: the knots become Legendrian equivalent after two stabilizations of opposite sign on each. We have a candidate for a counterexample to the stronger statement, without stabilizations, but the corresponding knots are very complicated. We have not succeeded in distinguishing them by using known invariants of Legendrian isotopy so far.

This work is in progress.

STEKLOV MATHEMATICAL INSTITUTE, 8 GUBKINA STREET, MOSCOW 119991, RUSSIA  
*E-mail address:* dynnikov@mech.math.msu.su