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Title:A contact version of Kirby's theorem

Abstract: Contact surgery is one of the central tools for describing and constructing contact 3-manifolds. By a theorem of Ding and Geiges, every closed contact 3-manifold can be obtained from the standard contact 3-sphere by contact (+/-1)-surgery along a Legendrian link. As in the classical topological setting, such descriptions are far from unique, and it is natural to ask for a contact analogue of Kirby's theorem: a complete list of diagrammatic moves relating any two surgery diagrams of the same contact manifold.

In this talk, I will explain a contact version of Kirby's theorem. The result builds on a strategy initiated by Avdek, who proved that any two contact surgery links representing contactomorphic contact manifolds are related by Legendrian isotopies and ribbon moves. However, ribbon moves very general, and they are not explicit diagrammatic moves in the front projection. The main step is therefore to understand how to replace them by a finite collection of explicit moves. I will describe the new moves that are needed, in particular the lantern and chain moves, and explain how they lead to a complete diagrammatic calculus for contact surgery diagrams.

This is joint work with Marc Kegel and Vera Vértesi.