

Meeting: 1002, Pittsburgh, Pennsylvania, SS 1A, Special Session on Invariants of Knots and 3-Manifolds

1002-57-244 **Vladimir V. Chernov*** (Vladimir.Chernov@dartmouth.edu), Mathematics Department, 6188
Bradley Hall, Dartmouth College, Hanover, NH 03755. *Relative Framing of Transverse Knots.*

It is well-known that a knot in a contact manifold (M, C) transverse to a trivialized contact structure possesses the natural framing given by the first of the trivialization vectors along the knot. If the Euler class $e_C \in H^2(M)$ of C is nonzero, then C is nontrivializable and the natural framing of transverse knots does not exist.

We construct a new framing-type invariant of transverse knots called relative framing. It is defined for all tight C , all closed irreducible atoroidal M , and many other cases when the contact structure is not trivializable and the classical framing of transverse knots is not defined. We show that the relative framing distinguishes many transverse knots that are isotopic as unframed knots.

Our recent result is that the groups of Vassiliev-Goussarov invariants of transverse and of framed knots are canonically isomorphic, when C is trivialized and transverse knots have the natural framing. We show that the same result is true whenever the relative framing is well-defined.

As a useful tool, we show that $|e_C(\alpha_*([F^2]))| \leq \max\{0, -\chi(F^2)\}$ for a tight (M, C) and a continuous mapping $\alpha : F^2 \rightarrow M$ of a closed oriented F^2 . This generalizes the Eliashberg's Bennequin-type inequality for embeddings α . (Received September 15, 2004)