1014-55-424 **Jianjun Paul Tian*** (tianjj@mbi.ohio-state.edu), Mathematical Biosciences Institute, The Ohio State University, Columbus, OH 43210. *On several types of universal invariants of framed links and 3-manifolds derived from quantum groups.* Preliminary report.

Hennings was the first to use quasitriangular ribbon Hopf algebras and their right integrals to directly construct general invariants for colored framed links and 3-manifolds. After that, Kauffman and Radford, and Ohtsuki also used different methods and defined so-called universal invariants of framed links and 3-manifolds respectively. The author also gave a way to define universal invariants of links and 3-manifolds in one of my unpublished paper. In this talk, I will use the concept of "accompanies of Hopf algebras" to give relations among these universal invariants. If we ignore the difference by a constant scale or "accompany", these four types of invariants are equivalent. That is, there is, essentially, only one family of invariants of links and 3-manifolds that can be constructed without representations of quantum groups. (Received September 15, 2005)