Speaker: **Hsiang, Wu-Chung**
Title: *Remarks on Ozsváth-Szabó's Theory*
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Abstract: Let $M^3 = H \bigcup_F H$ be a Heegaard diagram of an oriented 3-dimensional homology 3-sphere M^3, where H's are handlebodies (of genus g) and $F = \partial H$ is the common boundary surface. The meridians of both sides become the α-curves $(\alpha_1, \alpha_2, \ldots, \alpha_g)$ and the β-curves $(\beta_1, \beta_2, \ldots, \beta_g)$ on F. Assume that they intersect transversely. Fix a complex structure of F and it induces a symplectic structure on the g-fold symmetric product $\mathrm{Sym}^g(F)$. The tori $T_\alpha = \alpha_1 \times \alpha_2 \times \cdots \times \alpha_g$ and $T_\beta = \beta_1 \times \beta_2 \times \cdots \times \beta_g$ are Lagrangians of $\mathrm{Sym}^g(T)$. Peter Ozsváth and Zoltán Szaobó have considered the Lagrangian intersection homology theory á la Floer. It turns out that the chain complexes may depend on various choices but the homology groups are the same up to isomorphisms. These are the O-Z invariants of M^3. For the standard S^3, it is isomorphic to $\mathbf{Z}$. (We say that O-Z $= 1$.)

In a very preliminary joint work with T.J. Li, we try to describe O-Z directly from the α-curves and β-curves on F. Particularly, we are experimenting the the following question:

Question: How do we describe the α-curves and β-curves when O-Z $= 1$ (and $g = 2$)?

We also speculate the relative O-Z invariants. We hope that the relative invariants may be used to study the general case (i.e. $g > 2$) for O-Z $= 1$.