

*Speaker:* **Zhong, Jianyuan**  
*Title:* *On the Kauffman Skein Modules*  
*Authors:* Zhong, Jianyuan K.  
*Affiliations:* Louisiana Tech University

*Abstract:* Let  $k$  be a subring of the field of rational functions in  $\lambda, s$  which contains  $\mathbb{Z}$  and  $s^{-1}$ . Let  $M$  be a compact oriented 3-manifold, and let  $K(M)$  denote the Kauffman skein module of  $M$  over  $k$ . Then  $K(M)$  is the  $k$ -module freely generated by isotopy classes of framed links in  $M$  modulo the Kauffman skein relations. In the case of  $k = \mathbb{Q}(\lambda, s)$ , the field of rational functions in  $\lambda, s$ , we give a basis for the Kauffman skein module of the solid torus and a basis for the relative Kauffman skein module of the solid torus with two points on the boundary. We then show that  $K(S^1 \times S^1)$  is freely generated by the empty link, i.e.,  $K(S^1 \times S^1)$