

**Title:** Detecting some free subgroups of mapping class groups using Dynnikov coordinates

**Abstract:** Let  $S$  be a compact surface, and  $\text{Mod}(S)$  be the group of isotopy classes of orientation preserving diffeomorphisms on  $S$ . In this talk, we will consider the problem of finding conditions on a set of curves  $\{c_1, c_2, \dots, c_k\}$  on  $S$  so that the subgroup of  $\text{Mod}(S)$  generated by Dehn twists about these curves, denoted by  $\langle C_1, C_2, \dots, C_k \rangle$ , is isomorphic to a free product of Abelian groups or a free group of rank  $k$ . There are various studies on this problem. We will mention previously known results and techniques used in their proofs. Unlike the methods used in the previously known results on this problem, we will use Dynnikov coordinates and cover the cases where the previous techniques do not work. This work is joint work with F. Atalan, E. Dalyan, and Ö. Yurttaş.