

# THE BIRMAN EXACT SEQUENCE FOR THE HYPERELLIPTIC MAPPING CLASS GROUP

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ABSTRACT. In this talk, we will introduce the mapping class group and hyperelliptic mapping class group of an oriented topological surface and the Birman exact sequence associated to these groups. The mapping class group has been extensively studied in many areas of mathematics such as topology, geometry, geometric group theory, algebraic geometry, and number theory. The hyperelliptic mapping class group is a subgroup of the mapping class group determined by a fixed hyperelliptic involution of the surface. The involution yields a symmetry on the surface, and the hyperelliptic mapping class group contains the information of the symmetry. It is known that the Birman exact sequence for the mapping class group does not split. In this talk, the analogous result for the hyperelliptic mapping class group will be discussed, and a key tool called the relative completion of discrete groups will be introduced.