

## **The infinitesimal rigidity of symmetric bar-joint frameworks on the plane**

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**Abstract:** Symmetric plane bar-joint frameworks have been studied extensively. The area splits into the research of forced and incidental (infinitesimal) rigidity: the former strictly studies motions that maintain the symmetry of the frameworks, whilst the latter also takes into consideration infinitesimal motions that break the symmetry. The research of both forced and incidental infinitesimal rigidity has led to a number of combinatorial results.

All such results are restricted to the case where the symmetry group acts freely on the joints of the framework. My PhD research drops the free action requirement and tries to find a combinatorial characterisation for symmetric frameworks which allow fixed joints. So far, we have a combinatorial characterisation of incidental rigidity of plane frameworks which are symmetric with respect to a reflection group, or a rotation group of order 2,4,6, or of odd order less than 1000.