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Plane-flexible complete bipartite graphs

The complete bipartite graph $K_{3,3}$, considered as a hinged structure in the Euclidean plane with hinges at the vertices and rods of constant length as edges, in the general case allows only motions as a rigid whole, that is, it is not flexible. Two exotic types of its flexibility were found in 1899 by A. Dixon. For more than a century, on the basis of Dixon’s results, in the works of various authors, the problem of the flexibility in the plane of complete bipartite graphs $K_{m,n}$, $m, n \geq 3$ with pairwise incompatible vertices has been solved in many but not all cases. The report presents the complete solution, obtained jointly with S.Yu. Orevkov, of the problem of flexibility in the plane of the graphs $K_{m,n}$. No new exotic types of bending have been discovered.

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