

5-regular graphs in \mathbb{R}^3 and \mathbb{L}_p^3

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The combinatorial nature of the generic d -dimensional rigidity matroid is well understood when $d=1,2$ but open when $d>2$. Jackson and Jordán characterised independence in the generic d -dimensional rigidity matroid for connected graphs with minimum degree at most $d+1$ and maximum degree at most $d+2$. Tony Nixon and myself proved a similar characterisation for $(d+2)$ -regular graphs, which is known to be false when $d>3$, leaving open the case when $d=3$. I will present some important steps in the proof of this result and the corresponding problem in \mathbb{L}_p^3 which presents some interesting differences.