

1096-57-1814

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(ekaceves@mail.fresnostate.edu). *An invariant for spatial graphs*. Preliminary report.

A spatial graph is an embedding of a graph in three-dimensional space. We construct an invariant for spatial graphs by performing certain replacements at the vertices of a graph diagram, which results in a collection  $C$  of arcs and knot/link diagrams. After discarding the arcs, we use known polynomial invariants for knots and links to evaluate the objects in the collection  $C$ , and obtain a Laurent polynomial associated with our original spatial graph, which is independent on the embedding type of the graph. Thus our approach yields an invariant for spatial graphs. We discuss some properties of this invariant, including a relationship between the resulting invariant of a spatial graph  $G$  and the invariants associated with the two graphs obtained from  $G$  by applying the contraction-deletion move in a neighborhood of a vertex of the graph  $G$ . (Received September 16, 2013)