

Hom complex of Mapping cylinders of graphs

Shuchita Goyal

*Department of Mathematics, Indian Institute of Technology Bombay, India
shuchita@iitb.ac.in*

Rekha Santhanam

*Department of Mathematics, Indian Institute of Technology Bombay, India
reksan@iitb.ac.in*

Let \mathcal{G} denote the category whose objects are undirected graphs without multiple edges and morphisms are graph homomorphisms. We will define the notion of double mapping cylinder in the category \mathcal{G} . Let \mathcal{G}' be subcategory of \mathcal{G} , whose objects do not contain P_3 as an induced subgraph. We will show that the Hom complex functor $Hom(T, _)$ which was defined by Lovász maps double mapping cylinders in graphs to homotopy pushouts in topological spaces where T is a graph in \mathcal{G}' .

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