

# Polynomial Generalized Splines on Star Graph and Wheel Graph

Radhamadhavi Duggaraju

Department of Applied Sciences, Greater Noida Institute of Technology, Plot no:7,  
Greater Noida, India

\*Corresponding author's e-mail: rmadhavi17@gmail.com

## ABSTRACT

Let  $R$  be a commutative ring with identity and  $G$  be an edge labeled arbitrary graph. Let the edges of arbitrary graph  $G$  be labeled with ideals of ring,  $R$  and vertices be labeled by elements of the ring  $R$ . If difference of two vertex labels of each and every two adjacent vertices of  $G$  is contained in corresponding labeled edge ideal of  $G$ , then the vertex labelings are called generalized splines on  $G$  over  $R$ . The set of generalized splines is a ring and also an  $R$ -module. Also set of generalized splines contain a free submodule whose rank is the number of vertices in  $G$ . I study and describe about existence of trivial and non-trivial generalized splines on Star graph and Wheel graph which is constructed from cycle graph and star graph over real polynomial ring,  $R[x]$  using Chinese remainder theorem for real polynomials. I construct a flow-up basis for generalized spline module on wheel graph over real polynomial ring,  $R[x]$ .

**Keywords:** Commutative ring with identity; Generalized splines; Star graph

## How to Cite

R. Duggaraju, "Polynomial Generalized Splines on Star Graph and Wheel Graph", *AJIR Abstracts*, pp. 22–22, Feb. 2024.

