



# Gallai and anti-Gallai Graph Operators

Jeepamol J. Palathingal<sup>1,2</sup>

*Department of Mathematics  
PM Government College  
Chalaky, Kerala, India*

Aparna Lakshmanan S.<sup>3</sup>

*Department of Mathematics  
St.Xavier's College for Women  
Aluva - 683 101, Kerala, India*

---

## Abstract

The Gallai graph  $\Gamma(G)$  of a graph  $G$ , has the edges of  $G$  as its vertices and two distinct edges are adjacent in  $\Gamma(G)$  if they are incident in  $G$ , but do not span a triangle. The anti-Gallai graph  $\Delta(G)$  of a graph  $G$ , has the edges of  $G$  as its vertices and two distinct edges of  $G$  are adjacent in  $\Delta(G)$  if they lie on a common triangle in  $G$ . In this paper we study graphs  $G$  for which  $\Gamma(G) \cong \Delta(G)$ . We also prove that, there does not exist any graph  $G$  for which  $\Gamma(\Delta(G)) \cong \Delta(\Gamma(G)) \cong H$ , where  $H$  is diamond-free.

*Keywords:* Gallai graph, anti-Gallai graph, H-free graphs

---

<sup>1</sup> The authors thank the referees for their valuable suggestions and comments to improve the paper.

<sup>2</sup> Email: [jeepamoljp@gmail.com](mailto:jeepamoljp@gmail.com)

<sup>3</sup> Email: [aparnaren@gmail.com](mailto:aparnaren@gmail.com)