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Boyko Gyurov (bgyurov@ggc.edu) and **Daniel Pinzon*** (dpinzon@ggc.edu), 1000 University Center Ln, Lawrenceville, 30043. *The Determinant of Graphs Joined by Edges.*

Given the disjoint union of any two (di)graphs, G and H , we denote by $G \overset{j}{\asymp} H$ the graph given by adding j edges that connect distinct vertices of G to distinct vertices of H . We will show a procedure to decompose the determinant of $G \overset{j}{\asymp} H$ into the sum of the determinants of modifications of the original graphs. These modifications are vertex deletions and directed graph handles. We will show that the determinant calculations of certain joined graphs are greatly simplified using this method and mention some algebraic properties that result from the decomposition. We will also discuss many avenues for undergraduate research. (Received September 20, 2016)