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Size Multipartite Ramsey Numbers for Small Paths vs. $K_{2,n}$

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Abstract. Let G and H be finite graphs without loops and multiple edges. We use the notation $K_{j \times s} \to (G,H)$ to mean that if the edges of the complete graph $K_{j \times s}$ are coloured by the two colours red and blue, then either the red subgraph of $K_{j \times s}$ contains a copy of G, or the blue subgraph of $K_{j \times s}$ contains a blue copy of H. The size Ramsey multipartite number $m_j(P_3, K_{2,n})$ is defined as the smallest natural number s such that $K_{j \times s} \to (P_3, K_{2,n})$. In this paper, we obtain the exact values of the size Ramsey numbers $m_y(P_3, K_{2,n})$ and $m_y(P_4, K_{2,n})$ for $j \geq 3$.