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6-cycle system of the cartesian product $K_x \times K_y$ covering 2-paths in $K_{x,y}$

A cycle in $G_1 \times G_2$ is said to be *fair* if it has atmost two vertices in each row and in each column. Notions of *fairness* in graph decompositions have arisen in various forms, such as *equitable* and *gregarious* decompositions. In this talk, we give necessary and sufficient conditions, and the required constructions to obtain a *fair* (C_6, P_2) 1-covering of $K_s \times K_t$ which yields a (C_6, P_3) 1-covering of $K(S, T)$.