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Tactical (de)–composition of symmetric configurations

We present an extension technique to construct symmetric configurations of type $\lambda v_{\kappa+\lambda-1}$ with a canonical tactical decomposition in $\lambda$ copies of a symmetric configuration $C$ of type $v_{\kappa}$. Furthermore, we introduce a new method to describe certain tactical decompositions of symmetric configurations via block $(0,1)$–matrices with constant row and column sum having circulant blocks. We develop algebraic criteria to check whether such a $(0,1)$–matrix is linear, i.e. appears as the incidence matrix of some symmetric configuration. This allows us to investigate the blank area in the existence table of symmetric configurations. As a by–product, we obtain a new symmetric configuration $98_{10}$.