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A generalization of Pohlke's theorem. (Eine Verallgemeinerung des Satzes von Pohlke.)

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This generalised theorem states: Any two parallelepipeds in 3-space can be rotated in such a way that they “look identical”, meaning that their projections onto a plane perpendicular to the direction of view are congruent. For the proof, one can assume that the orthogonal projection O is along the 3-axis onto the 1-2-plane. The vectors spanning the edges of the two parallelepipeds are written as the columns of the two matrices V_1 and V_2 , respectively. The statement of the theorem then translates into $OW_1V_1 = OW_2V_2$ for suitable conformal-orthogonal transformation matrices W_1, W_2 . The author then proves that for any 3-by-3-matrix M of rank ≥ 2 , there exist suitable W_1, W_2 such that $OW_1M = OW_2$. In particular, this holds for $M = V_1V_2^{-1}$, which proves the theorem. *Wolfgang Globke (Adelaide)*

Classification: G40 H60

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