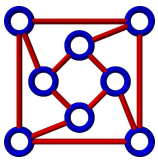

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CHARACTERISTIC FLOWS ON SIGNED GRAPHS AND SHORT CIRCUIT COVERS

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We generalise to signed graphs a classical result of Tutte [Canad. J. Math. 8 (1956), 13–28] stating that every integer flow can be expressed as a sum of characteristic flows of circuits. In our generalisation the rôle of circuits is taken over by signed circuits of a signed graph which occur in two types – either balanced circuits or pairs of disjoint unbalanced circuits connected with a path intersecting them only at its ends. As an application of this result we show that a signed graph G admitting a nowhere-zero k-flow has a covering with signed circuits of total length at most $2(k-1)|E(G)|$.