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A two slope theorem for the master equality polyhedron

The master cyclic group polyhedron (MCGP) is an important relaxation for integer-programming problems that gives rise to important inequalities like the Gomory Mixed-Integer (GMI) inequality. In a previous work, we generalized such relaxation to the Master Equality Polyhedron (MEP) and, in a manner similar to what was known for the MCGP, we characterized its facet-defining inequalities as extreme points of a "polar-type" polyhedron. While such characterization is important and allows for separation of inequalities via linear programming, more easily checkable sufficient conditions to derive strong inequalities are desirable. One such condition for the MCGP is the 2-slope condition, which states that if the function that defines the cut has 2-slopes and is minimal, then it is facet-defining. In this work we extend such 2-slope condition for the MEP setting and show how it extends to an infinite relaxation setting as well.