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## Generalized network inequalities for fixed-charge network polyhedra

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### **Abstract**

Recently, in Kucukyavuz and Pochet (2007), we gave a class of valid inequalities for a special case of fixed-charge network flow problems, known as lot sizing with backlogging, that completely describes the convex hull of feasible solutions to these problems. These inequalities are uncommon for the network (or flow path) inequalities proposed earlier for fixed-charge network flow polyhedra in that the coefficients of the continuous variables take general integer values instead of 0 – 1 values. In this talk, we give a generalization of the network inequalities valid for capacitated fixed-charge network flow problems. We show the relationship between the proposed generalized network inequalities and submodular inequalities. Finally, we illustrate the usefulness of these inequalities for a multi-echelon supply chain problem.