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Rachelle DeCoste, Lisa DeMeyer, Meera Mainkar and Allie Ray*

(allie.ray@trincoll.edu). *Nilpotent Metric Lie Algebras Constructed from Schreier Graphs.*

We will consider the properties of a certain two-step nilpotent metric Lie algebra constructed from a Schreier graph. This construction is a generalization of a method used by S.G. Dani and M.G. Mainkar. Results will include necessary and sufficient conditions for extending this two-step nilpotent Lie algebra to a three-step nilpotent Lie algebra. In addition, starting with pairs of Schreier graphs of a Gassmann-Sunada triple, I will consider the geometry (in particular issues of isospectrality and isometry) of the associated metric Lie algebras. Finally, recent results have shown that these Lie algebras are always singular, which contrasts with results using the previous construction method. (Received September 25, 2017)