

1041-17-264

Anthony Giaquinto* (tonyg@math.luc.edu), Department of Mathematics, Loyola University Chicago, Chicago, IL 60640, and **Murray Gerstenhaber** (mgersten@math.upenn.edu), Department of Mathematics, University of Pennsylvania, Philadelphia, PA 19104. *Graphs, Frobenius functionals, and the classical Yang-Baxter equation.*

A Lie algebra \mathfrak{g} is Frobenius if it admits a linear functional F such that the Kirillov form $F([x, y])$ is non-degenerate. If \mathfrak{g} is the m th maximal parabolic subalgebra $\mathcal{P}(n, m)$ of $\mathfrak{sl}(n)$ this occurs precisely when $(n, m) = 1$. We define a *cyclic* functional F on $\mathcal{P}(n, m)$ and prove it is non-degenerate using properties of certain graphs associated to F . These graphs also provide in some cases readily computable associated solutions of the classical Yang-Baxter equation. We also define a *local ring* associated to each connected loopless graph from which we show that the graph can be reconstructed. Finally, we examine the seaweed Lie algebras of Dergachev and Kirillov from our perspective. (Received August 12, 2008)