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**David Swinarski\*** ([swinarsk@math.columbia.edu](mailto:swinarsk@math.columbia.edu)), 509 Mathematics, 2990 Broadway, MC 4406, New York, NY 10027. *Graph curves: equations and automorphisms.*

A curve  $C$  is a graph curve if it is a connected, reduced, projective algebraic curve with only nodes as its singularities, and every irreducible component of its normalization is isomorphic to  $\mathbb{P}^1$ . The graph is obtained as follows: take the set of irreducible components of  $C$  as vertices; vertices  $i$  and  $j$  are connected by an edge for every node connecting components  $C_i$  and  $C_j$ . In their 1991 paper Bayer and Eisenbud give a number of results on the canonical linear series and equations under the canonical embedding for certain graph curves; it seems they, along with Ciliberto, Harris, Miranda and others, were primarily interested in resolutions of canonical ideals and applications to Green's conjecture. We describe an algorithm for writing equations of 2-canonically embedded graph curves. The algorithm is actually easier than the corresponding algorithm for canonical graph curves, and it applies to a larger class of graphs. We will apply this to study automorphisms of stable curves and the moduli space of curves as time permits. (Received February 08, 2007)