1021-14-132   **Martin Olsson*** (`molsson@math.berkeley.edu`), Department of Mathematics, 970 Evans Hall #3840, Berkeley, CA 94720-3840. *The Picard group of the moduli stack of elliptic curves.*

I will report on joint work with William Fulton. In a beautiful 1965 paper, Mumford introduced the notion of the Picard group of a stack (though not in the modern language), and computed the Picard group of the moduli stack of elliptic curves over a field of characteristic not 2 or 3 to be isomorphic to $\mathbb{Z}/(12)$. This naturally leads to the question: If S is a scheme and $\mathcal{M}_{1,1,S}$ denotes the moduli stack over S classifying elliptic curves, what is $Pic(\mathcal{M}_{1,1,S})$? In this talk I will give an essentially complete answer to this question as well as the analogous question for the standard compactification $\overline{\mathcal{M}}_{1,1}$ of $\mathcal{M}_{1,1}$. (Received September 01, 2006)