Moduli spaces of singular curves via GIT for canonical curves

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Abstract. We will describe a proof of semistability of finite Hilbert points for the general canonical curve of arbitrary genus (this is joint work with Jarod Alper and David Smyth). The generic stability result opens the door to analyzing a whole menagerie of new GIT quotients, which are expected to be log canonical models of the moduli space of stable curves. In low genus this expectation can be verified, and a complete GIT analysis is possible. We will discuss an instance of such an analysis leading to a functorial description of the final log canonical model of the moduli space of stable curves of genus 5 (joint work with David Smyth).