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William Harvey*, Maths Dept., King's College London, Strand, London, WC2R 2LS, England, and **Arthur Lloyd-Phillips**. *Symmetry and moduli spaces for low genus algebraic curves*. Preliminary report.

The canonical genus 3 curve is a plane quartic and has 28 bitangents: this famous configuration has automorphism group isomorphic to the Weyl group of E_7 . In genus 4, a similar but more complicated structure comprising the tritangent planes to the canonical sextic curves in 3-space gives a representation of the Weyl group $W(E_8)$. These structures, along with the representation of $W(E_6)$ on the 27 lines in a cubic surface, admit interesting connections, found by Coxeter and du Val in the 1920s, with the combinatorial structure of certain higher dimensional regular polytopes.

For higher genus, the analogous structure comprises the set of multi-tangent hyperplanes to the canonical curve in $(g-1)$ -dimensional space; the automorphism group $\mathcal{A}(g)$ is no longer a Weyl group and little seems to be known about these configurations. We show that the group $\mathcal{A}(g)$ is a finite group of permutations of the set of odd theta characteristics, which serves as an envelope for all automorphism groups of canonical genus g curves. (Received July 26, 2010)