Symmetric cubic graphs with non-solvable automorphism groups

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A cubic graph Γ is called G-symmetric if a group G of automorphisms of Γ acts transitively on the arcs of Γ, and G-basic if it is G-symmetric and G has no non-trivial normal subgroups with more than two orbits on the vertex set of Γ. We say the graph Γ is basic if it is G-basic for all arc-transitive subgroups of $Aut(\Gamma)$. In this talk, a characterization of basic symmetric cubic graphs with non-solvable automorphism groups will be discussed. This is a joint work with Jin-Xin Zhou.