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Automorphisms of del Pezzo surfaces in positive characteristic

We investigate the possible automorphism groups of del Pezzo surfaces of degree less than 4 in arbitrary characteristic. For such surfaces, the sets of effective divisors in the Picard groups and their intersection theory are closely related to the root systems E_6 , E_7 and E_8 . Indeed, any automorphism group embeds into the Weyl group of these root systems. We discuss how this connection can be exploited to determine the possible automorphism groups and illuminate their geometry.