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## Hypergeometric solutions to the Painlevé systems

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### Abstract

The simplest hypergeometric solutions to all the possible cases of the 2nd order Painlevé systems are explicitly constructed by using the framework based on the geometry of plane cubic curves. We obtain the coalescence diagram of hypergeometric functions from the elliptic hypergeometric function  ${}_{10}E_9$  to the Airy function according to the coalescence of root system of type  $E_8$ .