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On the connectivity of dual graphs of projective curves

In 1962, Hartshorne proved that the dual graphs of an arithmetically Cohen- Macaulay scheme is connected. After establishing a correspondence between the languages of algebraic geometry, commutative algebra and combinatorics, we are going to refine Hartshorne's result and measure the connectedness of the dual graphs of certain projective schemes in terms of an algebro-geometric invariant of the projective schemes themselves, namely their Castelnuovo-Mumford regularity. This is joint work with B. Benedetti and M. Varbaro.