

A trajectorial interpretation of Moser's proof of the Harnack inequality

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Abstract. In 1971 Moser published a simplified version of his proof of the parabolic Harnack inequality. The new core ingredient is a fundamental lemma due to Bombieri and Giusti, which combines an L^p - L^∞ -estimate with a weak L^1 -estimate for the logarithm of supersolutions. In this note, we give a novel proof of this weak L^1 -estimate. The presented argument uses *parabolic trajectories* and does not use any Poincaré inequality. Moreover, the proposed argument gives a geometric interpretation of Moser's result and could allow transferring Moser's method to other equations.

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