

**Analytic solutions of heat equations
with variable coefficients**

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Abstract. We give an extension of the mean-value property and its converse to the case of real analytic functions and to functions of Laplacian growth. As an application we give characterizations of analytic and Borel summable solutions in time variable of the initial value problem to the heat equation $\partial_t u = \Delta u$ in terms of holomorphic properties of the solid and/or spherical means of the initial data. Finally we shall generalize the results to the case when the Laplace operator Δ is replaced by a sum of squares of commuting analytic vector fields.