Maximum principle and related topics

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Abstract: Strong maximum principle is an important tool in the theory of elliptic and parabolic equations of the second order. Qualitive properties of solutions such as the Harnack inequality, the Liouville theorem, boundary gradient estimates and the Hopf lemma are closely related to maximum principle. The goal of the lectures is to investigate these properties under the optimal conditions on the coefficients of equations and to present some applications of the results.