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**Jiuyi Zhu\*** (jzhu18@lsu.edu). *Quantitative uniqueness of solutions to parabolic equations*. Preliminary report.

We investigate the quantitative uniqueness of solutions to parabolic equations with lower order terms on compact smooth manifolds. Quantitative uniqueness is a quantitative form of strong unique continuation property. We characterize quantitative uniqueness by the rate of vanishing. We can obtain the vanishing order of solutions by  $C^{1,1}$  norm of the potential functions, as well as the  $L^\infty$  norm of the coefficient functions. Some new quantitative Carleman estimates and three cylinder inequalities are established. (Received August 31, 2017)