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A Stochastic Gronwall Inequality and Its Applications

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Abstract: In this paper, we show a Gronwall type inequality for Ito integrals (Theorems 1.1 and 1.2) and give some applications. Our inequality gives a simple proof of the existence theorem for stochastic differential equation (Example 2.1) and also, the error estimate of Euler-Maruyama scheme follows immediately from our result (Example 2.2}).

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