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Quantized expected returns in terms of dividend yield at the money LAMINE DIENG, City University of New York — We use the Bachelier (additive model) and the Black-Scholes (multiplicative model) as our models for the stock price movement for an investor who has entered into an America call option contract. We assume the investor to pay certain dividend yield on the expected rate of returns from buying stocks. In this work, we also assume the stock price to be initially in the out of the money state and eventually will move up through at the money state to the deep in the money state where the expected future payoffs and returns are positive for the stock holder. We call a singularity point at the money because the expected payoff vanishes at this point. Then, using martingale, super-martingale and Markov theories we obtain the Bachelier-type of the Black-Scholes and the Black-Scholes equations which we hedge in the limit where the change of the expected payoff of the call option is extremely small. Hence, by comparison we obtain the time-independent Schroedinger equation in Quantum Mechanics. We solve completely the time independent Schroedinger equation for both models to obtain the expected rate of returns and the expected payoffs for the stock holder at the money. We find the expected rate of returns to be quantized in terms of the dividend yield.

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