In this paper we study the distribution of Coupled-Additive Multiple Noises (CAM) stochastic volatility model using a fast Fourier transform (FFT) method. The technique in Heston’s paper is applied to derive a closed-form solution for the characteristic function of this model. The characteristic function is in the form

$$
\phi(x, y, T; u) = \exp\{C(T - t; u) + D(T - t; u)y + iux\},
$$

where $x$ is the spot asset return, which is $\log(S_t)$, $y$ is the diffusion process which drives the volatility of underlying asset $S_t$, $T - t$ represents the time to maturity of the European call option, and $C(T - t; u)$ and $D(T - t, u)$ are two time related terms which can be solved from two ordinary differential equations. The ordinary differential equations are from the Fokker-Planck forward equation. The curve of the characteristic function under certain initial conditions has been plotted. Based on this function, the probability density of $x$ was computed using the FFT method. The plot of the distribution is skewed with a fat left tail. European call option prices are computed using the modified call price FFT method mentioned in Carr and Madan’s paper. (Received September 19, 2012)