

**ON A MODEL FOR THE TERM STRUCTURE OF INTEREST  
RATE PROCESSES OF STABLE TYPE**

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**Abstract**

Let  $M(t), t \geq 0$ , be an one-dimensional symmetric stable process of index  $0 < \alpha \leq 2$ . As a model for the term structure of interest rate processes we consider  $r(t) = \mathcal{G}(t, M \circ T(t))$  or as special case  $r(t) = F\left(f(t) + g(t)M \circ T(t)\right)$  for some functions  $\mathcal{G}, F, T, f$  and  $g$ . We show that this model includes in particular some models which can be described by the Ito stochastic differential equations driven by the process  $M$ . It generalizes also the known Schmidt's model which is a special case of our model if  $\alpha = 2$ . Moreover, we construct also a sequence of simple processes (random walks) obtained as the sums of i.i.d random variables which belong to the domain of attraction of the corresponding stable distribution. It is proved that this random walk models converge in law to the interest rate processes  $r(t)$ .

**Key Words:** Short rate, stochastic differential equations, stable processes, random walk