The purpose of this (very short document) is to describe the Cir process (Cox–Ingersoll–Ross model).

The process is used to forecast interest rate, like Vasicek’s model, it is in fact very similar to it, but with a small variation: it does not allow for negative interest.

Disallowing interest was the big advantage of the Cox-Ingersoll-Ross model over the Vasicek model. but in recent years as many European central banks have introduced negative rates.

Well let’s just focus on the process, each increment is given by:

Yes! Very similar to Vasicek where is the strength with which the process goes to the mean value, is what we called (the mean), is the volatility.

Our standard deviation factor is now and that square root (given that are positive) ensure positive interest.

It is possible also to ensure strictly positiveness .

Obviously when is close to zero the standard deviation is very small ( so the drift makes the difference ( )