A Hill type estimator in a non recurrent diffusions processes

Tahar Mourid, Université Abou Bekr Belkaid

Abstract

We consider a diffusion process $(X_t, t \geq 0)$ solution of

$$dX(t) = \beta X_t^{\alpha} dt + \sigma dW(t), \quad t \geq 0, X_0 = x_0 > 0$$

where $\beta > 0$, $\sigma > 0$ are known α is the parameter of interest and $-1 < \alpha < 0$ $(W(t), t \geq 0)$ is the Wiener process. The diffusion process (X_t) is non recurrent and has an asymptotic behavior given by Theorem 5.17 in Gikhman - Skorokhod (1980). We propose a continuous time Hill type estimator for the parameter α and investigate its consistency and asymptotic normality and discuss its efficiency.