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In a continuous time context, we study the asymptotic behaviour of kernel density estimator for stationary processes observed over the time interval  $[0, T]$ . First, we give asymptotic rates for almost sure convergence (pointwise and uniform) : it is shown that rates and optimal choice of bandwidths essentially depend on two parameters  $r$  and  $\beta$ , which are related to regularity of , respectively, the underlying density and the observed sample path. Next, for both unknown  $r$  and  $\beta$ , we compute adaptive estimators (in other words estimators with an automatic bandwidth choice) and we show that they reach same optimal rates of convergence.

## References

- [1] D. Blanke (2002). Sample paths adaptive density estimator. *Submitted*.
- [2] D. Blanke (2002). Doubly adaptive density estimation in continuous-time. *In preparation*.

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