1019-60-102        **Tom Schmitz\*** (`schmitz@math.ethz.ch`), Mathematics Department, UCLA, Box 951555, Los Angeles, CA 90095-1555. *Diffusions in random environment and ballistic behaviour.*

We study continuous diffusions in random environment in d-dimensional space.

Once the environment is chosen, it remains fixed in time. To restore some stationarity, it is common to average both with respect to the path and environment mesure. One then obtains the so-called annealed measures, that are typically non-Markovian measures.

Our goal is to study the asymptotic behavior of the diffusion in random environment under the annealed measure, with particular emphasis on the ballistic regime ('ballistic' means that a law of large numbers with non-vanishing limiting velocity holds). In the spirit of Sznitman, who treated the discrete setting, we introduce conditions (T) and (T'), and show that they imply, when d>1, a ballistic law of large numbers and a central limit theorem with non-degenerate covariance matrix.

As an application of our results, we point out to the broad range of examples where condition (T) can be checked. When d>1, we will not only recover the ballistic character of certain classes of diffusions in random environment previously obtained by different methods, but we will also highlight condition (T) as a source of new examples of ballistic diffusions in random environment. (Received August 09, 2006)