

1015-41-141

**Stefan Geiss\*** (geiss@maths.jyu.fi) and **Anni Toivola** (atoivola@maths.jyu.fi).

*Interpolation and approximation of stochastic integrals.*

We investigate the weak convergence and integrability properties of the rescaled error process in Riemann discretizations of certain stochastic integrals in dependence of the fractional smoothness of the stochastic integral. The fractional smoothness is defined through real interpolation between the Malliavin Sobolev space and the space  $L_2$ . The Riemann discretizations use deterministic, but not necessarily equidistant, time nets. It turns out that the integrability properties of the rescaled error process improve under special non-equidistant nets, chosen in dependence of the fractional smoothness of the stochastic integral, in comparison equidistant time-nets are used. And one gets an equivalence: if the integrability properties do improve under these particular time nets, then the stochastic integral has the fractional smoothness one was starting from. (Received February 02, 2006)