1018-28-27 **Martina Zähle*** (zaehle@math.uni-jena.de), Mathematical Institute, University of Jena, D-07737 Jena, Germany. *Mean curvatures of random self-similar sets.*

Random self-similar sets in n-dimensional Euclidean spaces are considered for which almost all small neighbourhoods with probability 1 have a singular structure admitting a unit normal cycle. (In the case n=2 this is always fulfilled.) Then for these neighbourhoods random generalized Lipschitz-Killing curvatures (measures) in the classical sense are determined. Under some additional geometric conditions on the joint distribution of the generating random similarities we prove that the appropriately rescaled mean values of the curvatures of the neighbourhoods converge (in the average) to some limits. The latter may be interpreted as mean fractal curvatures of the random self-similar sets. In this way we obtain a parameter system which reflects the geometry of the random fractals. Their Hausdorff dimension as a measure theoretic parameter and the order of the curvatures determine the associated scaling exponents in the above limits. A deterministic measure variant for the case of polyconvex neighbourhoods with some explicit calculations is presented in the talk of S. Winter. (Received February 03, 2006)