**Meeting:** 1004, Bowling Green, Kentucky, SS 8A, Special Session on Topology, Convergence, and Order, in Honor of Darrell Kent

1004-54-24 **Gerhard Preuss*** (preuss@math.fu-berlin.de), Freie Universitaet Berlin, I. Mathematisches Institut, Arnimallee 3, 14195 Berlin, Germany. *Fuzzy Natural Function Spaces.*

Fuzzy preuniform convergence spaces are presented, where the concept of a fuzzy filter w.r.t. a completely distributive complete lattice $L$ with different least element 0 and greatest element 1 in the sense of P. Eklund and W. Gähler is used. It turns out that the construct **FPUConv** of fuzzy preuniform convergence spaces is cartesian closed (i.e. it has natural function spaces), and topological which implies that initial and final structures exist. The main discovery results in the fact that from the natural function space structure in **FPUConv** other natural function space structures can be derived, e.g. the structure of fuzzy continuous convergence as well as the fuzzy analogue of the uniformly continuous **SUConv**-structure and the Cauchy continuous **Fil**-structure known from Convenient Topology. Furthermore, in case $L = \{0, 1\}$, i.e. in the non-fuzzy case, all concepts may be identified with the usual ones. (Received December 22, 2004)