

**Meeting:** 1001, Evanston, Illinois, SS 8A, Special Session on Computability Theory and Applications

1001-03-6            **Alexander Raichev\*** (raichev@math.wisc.edu), 480 Lincoln Dr, Madison, WI 53706. *Relative Randomness and Real Closed Fields*. Preliminary report.

We prove that for all (infinite) binary sequences  $\beta$ ,  $\mathcal{R}^\beta := \langle \mathbb{R}^\beta, +, \cdot, < \rangle$  is a countable real closed field, where  $\mathbb{R}^\beta$  is the set of all reals less random than  $\beta$  in the sense of rK-reducibility. This generalizes the fact that the computable reals form a countable real closed field. One consequence of this and its proof is that the d.c.e reals form a real closed subfield of the field of reals less random than  $\Omega$ , Chaitin's random real. (Received April 05, 2004)