1067-03-547　　　　**Alexander P. Kreuzer*** (`akreuzer@mathematik.tu-darmstadt.de`), Department of Mathematics, Technische Universität Darmstadt, Schlossgartenstraße 7, 64289 Darmstadt, Germany. *Ramsey's theorem for pairs and program extraction.*

Let Ramsey's theorem for pairs (RT_2^2) be the statement that every coloring of unordered pairs of $\mathbb{N}$ using 2 colors admits an infinite homogeneous set. We present a method for program extraction from proofs that use RT_2^2. (These programs are provably total relative to Σ_2^0-induction.)

Further, we discuss the cohesive principle (COH). This principle is a consequence of RT_2^2. We show that COH together with the infinite pigeonhole principle implies the variant of the Bolzano-Weierstrass principle that states that every bounded sequence of reals contains a slowly converging subsequence. Slowly converging means here that the sequence converges but we do *not* require a explicitly given rate of convergence (which is the case in the formalization of this principle used in reverse mathematics). We present for COH + infinite pigeonhole principle a method for program extraction that even yields primitive recursive terms.

We also comment on ongoing research. (Received September 09, 2010)