Übungen zur Vorlesung **Modelltheorie** (WS 2012/13) 1.2.2013
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Blatt 13

Aufgabe 1. If T is an L-theory and K is a sublanguage of L, the *reduct* $T \restriction K$ is the set of all K–sentences which follow from T. Show that a complete theory T is totally transcendental if and only if $T \restriction K$ is ω-stable for all at most countable $K \subseteq L$.

Aufgabe 2. Prove that for arbitrary T if the isolated types are dense in all $\mathrm{S}_1(A)$, then the isolated types are dense in all $\mathrm{S}_n(A)$.

Aufgabe 3. Prove that for every countable T the following are equivalent:

(a) Every parameter set has a prime extension. (We say that T *has prime extensions.*)

(b) Over every countable parameter set the isolated types are dense.

(c) Over every parameter set the isolated types are dense.

Aufgabe 4.

1. Let $\pi\colon X \to Y$ be a continuous open map between topological spaces. Show that a point $x \in X$ is isolated if and only if $\pi(x)$ is isolated in Y and x is isolated in $\pi^{-1}(\pi(x))$.
2. Use part 1. to give a proof of the following lemma from the lectures: Let a and b be two finite tuples of elements of a structure $\mathfrak{M}$. Then $\mathrm{tp}(ab)$ is atomic if and only if $\mathrm{tp}(a/b)$ and $\mathrm{tp}(b)$ are atomic.

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[0] `http://home.mathematik.uni-freiburg.de/caycedo/lehre/ws12_modell/`