Universität Freiburg, Abteilung für Mathematische Logik
Übung zur Vorlesung Modelltheorie 2, ss2015
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Blatt 10, stabil und superstabile Theorien

T is stable.

Aufgabe 1. Assume that $B \mathop{\smile\!\!\!\!\!\mid}_A a_1 a_1$. Show that

$$a_1 \mathop{\smile\!\!\!\!\!\mid}_A a_2 \Leftrightarrow a_1 \mathop{\smile\!\!\!\!\!\mid}_{AB} a_2.$$

Aufgabe 2. Let $p \in S(A)$ be stationary and I be a Morley sequence of p. Show that

1. If
$$B \supset A \quad I_0 \subseteq I \quad B \mathop{\smile\!\!\!\!\!\mid}_{AI_0} I$$
then $I - I_0$ is a Morley sequence of the non-forking extension of p to B.

2. The type
$$Av(I) = \{\phi(x, \bar{b}) | \bar{b} \in \mathfrak{C}, \{i | \models \neg\phi(a_i, \bar{b})\} \text{ finite}\}$$
is the non-forking global extension of p.

Aufgabe 3. Let I be a Morley sequence of a stationary type p over A and $B \mathop{\smile\!\!\!\!\!\mid}_A I$. Show that I is then a Morley sequence of the non-forking extension of p to AB.

Aufgabe 4. Correct the proof of Lemma 9.2.2: let I be indiscernible over A and B a countable set. Then I contains a countable I_0 such that $I - I_0$ is indiscernible over ABI_0.

Aufgabe 5. Show that in stable theories, U-rank=SU-rank.

Aufgabe 6. A simple theory is super-simple if and only if every **1-type** has SU-rank $< \infty$.

Aufgabe 7. T is stable if and only if every indiscernible sequence is totally indiscernible.

Aufgabe 8. Show that if $SU(p) = \infty$ then there is $q \sqsupset_{fork} p$ with $SU(q) = \infty$.