Classification of non-smooth pseudodifferential operators

C. Pfeuffer

R. Beals and J. Ueberberg proved a classification of pseudodifferential operators with smooth symbols. Since non-smooth pseudodifferential operators are sometimes used in order to calculate the regularity of a partial differential equation, such a classification would also be useful in this case. Therefore we will show, that every linear operator, which satisfies some specific continuity assumptions, is a non-smooth pseudodifferential operator of the class $C^\tau S_{1,0}^m(\mathbb{R}^n \times \mathbb{R}^n)$. Analogously to the proof of J. Ueberberg in the smooth case, one reduces this statement to the following: Each linear operator T, which fulfills some specific continuity properties, is a non-smooth pseudodifferential operator of the class $C^\tau S_{0,0}^0(\mathbb{R}^n \times \mathbb{R}^n)$. The main new difficulty is to take care of the limited mapping properties of pseudodifferential operators with non-smooth symbols.

The talk is based on a part of my PhD-thesis advised by Prof. H. Abels.