Georg-August-Universität Göttingen
Mathematisches Institut
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Wintersemester 2018/19
21.11.2018

Introduction to Scattering Theory
Exercise Sheet 4

Exercise 9.
Let $h \in C^\infty(\mathbb{R}^d;\mathbb{R})$ with $\nabla h(x) \neq 0$ a.e. Show that the multiplication operator M_h in $L_2(\mathbb{R}^d)$ has purely absolutely continuous spectrum.

Hint. Use the inverse function theorem and an appropriate change of variables.

Exercise 10.
Show that the operator $H_0 \coloneqq \overline{-\Delta\restriction_{C_c^\infty(\mathbb{R}^d)}}$ has purely absolutely continuous spectrum, i.e. $\mathcal{H}_{\mathrm{ac}}(H_0) = L_2(\mathbb{R}^d)$.

The solutions will be discussed in the tutorial on 28.11.2018.