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Correction to "Asymptotic behavior of some oscillatory integrals"

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It was pointed out by Dr. Hiroshi Isozaki that the conclusion v) of Lemma 2.1 on page 133 and 134 of my paper does not hold under the assumption of the lemma. Here we want to make some corrections, although the original proof with $\varepsilon_0=0$ works well and the result is sufficient for the application to the scattering theory (cf. [1]). In Lemma 2.1 replace B' by $B'_\tau=\{x\in R^k \mid |x|<c_0\tau^{a(3)}\}$ for $\tau>0$ and a small $c_0>0$ and change the conclusion v) to the next: v') $\exists c_1, c_2>0, \forall\tau\in J^i, \inf_{\omega\in\Omega} \mathrm{dist}(0, V_{\tau,\omega}{}^c)>c_1\tau^{a(3)}, \sup_{\omega\in\Omega} \mathrm{diam}\, V_{\tau,\omega}<c_2\tau^{a(3)}$. Then Lemma 2.1 holds without changing the assumption. In accordance with this correction, add another assumption $0\leqq\varepsilon_0<\delta$ to (1.3) hence to Theorem 1.2. Then Theorem 1.2 holds with δ_1 replaced by $\delta_1=\min(\rho-h', \delta)-\varepsilon_0>0$. The proof of Theorem 1.2 is corrected as follows. Replace $\tilde{\chi}$ in (2.13) and thereafter by $\tilde{\chi}_t$ defined by $\tilde{\chi}_t(x, \theta)=\tilde{\chi}(t^{a(3)}x, t^{a(3)}\theta)$. Here $\tilde{\chi}$ in the right side is defined as in page 135 with B' replaced by $B'_1=\{(x, \theta) \mid |(x, \theta)|<c_0\}$. In pages 136, 137, replace r and κ by $rt^{-\varepsilon_0}$ and $\kappa t^{-\varepsilon_0}$. These estimates are assured by the added assumption $0\leqq\varepsilon_0<\delta$ and by the following stronger version of the conclusion iii), b) of Proposition 1.1: b') There is a constant $C>0$ such that $|(x_c(t, \omega), \theta_c(t, \omega))-(x_\infty(\omega), \theta_\infty(\omega))|\leqq Ct^{-\delta}$ for $(t, \omega)\in(T, \infty)\times U$. Furthermore replace $\hat{\chi}_\omega$ on page 136 and thereafter by $\hat{\chi}_{t,\omega}$ which is constant for $|t^{\varepsilon_0}(\theta-\theta_\infty(\omega))+\theta_\infty(\omega)|>1$ and whose derivative $\partial_\theta^\alpha\partial_x^\beta\hat{\chi}_{t,\omega}$ is bounded by $Ct^{\varepsilon_0(|\alpha|+|\beta|)}$ uniformly in $\omega\in\Omega$. In (2.20) and (2.23), replace C_α by $C_\alpha t^{\varepsilon_0(|\alpha|+1)}$ for $j=1, \cdots, n$ in (2.20) and for a_j in (2.23), and by $C_\alpha t^{\varepsilon_0(|\alpha|+2)}$ for $j=0$ in (2.20) and for c in (2.23). Further replace α' in the power of t in the second term of the right side of (2.24) by α. Then the proof works well. As stated before, the above correction does not affect the results of [1], except its footnotes 6) and 10) which in turn hold when $1/2>\varepsilon_0>0$ and $m(1)+2m(3)>7$.

Reference

[1] H. Kitada, Scattering theory for Schrödinger operators with long-range potentials, II, spectral and scattering theory, J. Math. Soc. Japan, **30** (1978), 603-632.