Cauchy Problem for Noneffectively Hyperbolic Operators：正誤表

[p.1 $\uparrow$6—p.1 $\uparrow$11] Assume that $u \in H^\infty(\omega)$ vanishes in $x_0 < \tau$ with $|\tau| < \epsilon$. If $Pu = 0$ in $x_0 < t$ ($|t| < \epsilon$) then we conclude that $u = 0$ in $x_0 < t$. To see this, take $\chi \in C_0^\infty(\omega)$ and note that the equation $Pw = P(\chi u)$ has a solution $w \in H^\infty(\omega)$ vanishing in $x_0 < t$. Since $w - \chi u = 0$ in $x_0 < \min\{\tau, t\}$, and $P(w - \chi u) = 0$, by the uniqueness we get $w = \chi u$ and hence $u = 0$ in $x_0 < t$. Since $\chi \in C_0^\infty(\omega)$ is arbitrary we conclude $u = 0$ in $x_0 < t$.

$$\Longrightarrow$$

Assume that $u \in H^\infty(\omega)$ vanishes in $x_0 < \tau$ with $|\tau| < \epsilon$. If $Pu \in C_0^\infty(\omega)$ and $Pu = 0$ in $x_0 < t$ ($|t| < \epsilon$) then we conclude that $u = 0$ in $x_0 < t$. To see this note that the equation $Pw = Pu$ has a solution $w \in H^\infty(\omega)$ vanishing in $x_0 < t$. Since $w - u = 0$ in $x_0 < \min\{\tau, t\}$ and $P(w - u) = 0$ by the uniqueness of solution we conclude $w = u$ and hence $u = 0$ in $x_0 < t$.

[p.4 $\downarrow$5]

$$\min_{1\le j\le r} \frac{\sigma_j}{j} = \lambda = \frac{q}{p} \Longrightarrow \min_{1\le j\le r} \frac{\sigma_j}{j} = \lambda = \frac{p}{q}$$

[p.7 $\uparrow$6 — p.8 $\downarrow$11] Proof of Lemma 1.3.1 should be replaced by: Let ω be the open set in Definition 1.1. Take an open set V such that $K \Subset V \Subset \omega$. Then for any $f \in C_0^\infty(\overline{V_{-\epsilon}})$ there exists a unique $u \in H^\infty(\omega)$ satisfying $Pu = f$ in ω and vanishing in $x_0 \le -\epsilon$. Denote by T the map $T : C_0^\infty(\overline{V_{-\epsilon}}) \ni f \mapsto u \in H^\infty(\omega)$. Note that $H^\infty(\omega)$ is a Fréchet space equipped with countable semi-norms $\|\cdot\|_{H^p(\omega)}$, $p = 0, 1, \ldots$. Assume that $C_0^\infty(\overline{V_{-\epsilon}}) \ni f_j \to f$ in $C_0^\infty(\overline{V_{-\epsilon}})$ and $Tf_j = u_j \to u$ in $H^\infty(\omega)$. Since $Pu_j = f_j$ it is clear that $Pu = f$ and $u = 0$ in $x_0 \le -\epsilon$. From the uniqueness of the solution one has $Tf = u$ and hence the graph of T is closed. From the Banach's closed graph theorem it follows that T is a continuous map. Therefore for any $p \in \mathbb{N}$ the inverse image of $\{u \in H^\infty(\omega) \mid \|u\|_{H^p(\omega)} < 1\}$, which is a neighborhood of 0 in $H^\infty(\omega)$, is a neighborhood of 0 in $C_0^\infty(\overline{V_{-\epsilon}})$, that is there exist $\delta > 0$ and $q \in \mathbb{N}$ such that

$$f \in C_0^\infty(\overline{V_{-\epsilon}}),\ \ \|f\|_{H^q(V)} < \delta \Longrightarrow \|Tf\|_{H^p(\omega)} < 1.$$

For any $f \in C_0^\infty(\overline{V_{-\epsilon}})$ the $H^q(V)$ norm of $\delta f / \|f\|_{H^q(V)}$ is less than 1 then from the uniqueness of the solution we conclude that for any $f \in C_0^\infty(\overline{V_{-\epsilon}})$ and $u \in H^\infty(\omega)$ satisfying $Pu = f$ in ω and vanishing in $x_0 \le -\epsilon$ satisfies

$$\|u\|_{H^p(\omega)} \le \delta^{-1} \|f\|_{H^q(V)}.$$

[p.24 $\uparrow$7] $(-\xi_0^2 + 2\xi_0\xi_1 + x_1^2)/\sqrt{2} \Longrightarrow -\xi_0^2 + 2\xi_0\xi_1 + x_1^2$

[p.24 $\uparrow$6] $\lambda(x_0^2 - \xi_0^2)/\sqrt{2} \Longrightarrow \lambda(x_0^2 - \xi_0^2)$

[p.31 $\downarrow$12] $\sigma(v, F_p(\rho)h(\rho)) = 0 \Longrightarrow \sigma(v, F_p(\rho)h(\rho)) = 0, v \ne 0$

[p.35 $\downarrow$5] $(-\xi_0^2 + 2\xi_0\xi_1 + x_1^2)/\sqrt{2} \Longrightarrow -\xi_0^2 + 2\xi_0\xi_1 + x_1^2$

[p.141 $\downarrow$4] of the origin. $\Longrightarrow$ of the origin Ω such that $\operatorname{supp} \phi\psi\theta \subset \Omega \cap \{x_0 = 0\}$.

[p.141 $\uparrow$13] $u(x) = 0$ for $|x_0| \le T, |x'| \ge r \Longrightarrow \operatorname{supp} u \cap \{0 \le x_0 \le T\} \Subset \Omega$

[p.141 $\uparrow$12] with small $T > 0$ and $r > 0$. $\Longrightarrow$ with small $T > 0$.

[p.144 $\downarrow$13] Section 10.2 $\Longrightarrow$ Section 9.2

[p.144 $\downarrow$14] Section 10.4 $\Longrightarrow$ Section 9.4