Errata and Addenda in S. Helgason: The Radon Transform 2^{nd} Edition (First Printing)

These have been entered in the downloadable version.

Page and line in { above / below	Instead of:	Read:
3^2	omit "φ on $\mathbb{P}\ldots$, functions "	
5_{10}	R^n	$\mathbb{P}^n$
11_{12}	$\pi^{-\frac{1}{2}}$	$\pi^{\frac{1}{2}}$
12^4	(i)	(ii)
16_{11}	$dk)$	$)dk$
17_{14}	replaced by $f(x) = 0(\|x\|^{-n})$	dropped
17_{13}	with	for all lines with
25_{18}	$f * \varphi$	$f \times \varphi$
26_{14}	$\neq$	$=$
26^{12}	$\operatorname{supp}(\widehat{S}) \subset S_R(0)$	$\operatorname{supp}(S) \subset S_R(0)$
28^8	ψ_n	ψ
34^9	(63)	(64)
35^3	(68)	(69)
35^7	i, j	$i \neq j$
$35^6, 35_1, 36^2, 36^9$	$\partial_{2,1}, \partial_{2,d+1}$	$\partial_{1,1}, \partial_{1,d+1}$
$36^9, 36^{12}, 36^{14}$	$\partial_{2,n}$	$\partial_{1,n}$
39^7	$-\xi_1 + \xi_2 - \eta_1$	$-\xi_1 + \xi_2 + \eta_1$
40^7	z^2	(z^2+1)
40_3	xy	xy^2
42_5	$f_1(0)$	$f_1(x)$
42_2	$h(\langle x, w\rangle)$	$h(\langle x, w\rangle + t)$

Page and line in { above / below	Instead of:	Read:
44^9	w_{i_k}	$w_{i_k}\, dw$
44_5	$\widetilde{f}$	$\widetilde{f}_1$
58^{11}	o	c
62^4	$(\lambda(D)f)\check{}$	$(\lambda(D)f)\widehat{}$
67^4	cosh	coth
69^3	$k'a_{t'}, n'a_tN \cdot 0$	$k'a_{t'}n'a_tN \cdot 0$
69^{12}	-2	-1
69_6	$ch\, s$	$ch^3 s$
97^5	a circle	two circles.
97^7	"a circular arc"	"a pair of circular arcs"
98	$k-1$	$(k-1)!$.
101^{10}, 101_2	$f \times \tau$	$\pi^{-1} f \times \tau$
101_7	$-4\pi^2$	-4π
103^3, 103^{12}	$(4n+1)\sum_0^\infty$	$\sum_0^\infty (4n+1)$
119^6	formula	formula $f = Q(L)((\widehat{f})\check{}\,)$. Here Q
153_4	sequences	positive sequences
153_{15}	$n+1$	$-(n+1)$
153^5	Absolute value signs missing	
$154-155$	In equations (20), (23), (24) 1 should be replaced by 2	
156_2	(1)	(25)
156_5	Interchange P_1 and G_1	
167^{13}	(60)	(61)
180^{12}	397	394

44_4 Here one should use the following remark: If $\varphi(\lambda)$ is even, holomorphic on $\mathbb{C}$ and satisfies the exponential type estimate (13) in Theorem 3.3, Ch. V, then the same holds for the function Φ on $\mathbb{C}^n$ given by $\Phi(\zeta) =$

$\Phi(\zeta_1, \ldots, \zeta_n) = \varphi(\lambda)$ where $\lambda^2 = \zeta_1^2 + \cdots + \zeta_n^2$. To see this put

$$\lambda = \mu + iv\,, \quad \zeta = \xi + i\eta \qquad \mu, \nu \in \mathbf{R}\,, \quad \xi\,, \eta \in \mathbf{R}^n\,.$$

Then

$$\mu^2 - \nu^2 = |\xi|^2 - |\eta|^2\,, \quad \mu^2\nu^2 = (\xi \cdot \eta)^2\,,$$

so

$$|\lambda|^4 = (|\xi|^2 \, - \, |\eta|^2)^2 + 4(\xi \cdot \eta)^2$$

and

$$2|\operatorname{Im}\,\lambda|^2 = |\eta|^2 - |\xi|^2 + \left[(|\xi|^2 - |\eta|^2)^2 + 4(\xi \cdot \eta)^2\right]^{1/2}\,.$$

Since $|(\xi \cdot \eta)| \leq |\xi|\,|\eta|$ this implies $|\operatorname{Im}\,\lambda| \leq |\eta|$ so the estimate (13) follows for Φ.

45_1 Note that Part (ii) can also be stated: The solution is outgoing (incoming) if and only if

$$\int_\pi f_0 = \int_{H_\pi} f_1 \qquad (\int_\pi f_0 = -\int_{H_\pi} f_1)$$

for an arbitrary hyperplane $\pi (0 \notin \pi)$ H_π being the halfspace with boundary π which does not contain 0.

58^{11} The subscripts 0 should be c.

102^4 The function τ is only locally integrable but not integrable. However for λ real $\tau\varphi_\lambda$ is integrable and (62) holds by virtue of the proof of (53), p. 100.

102_{11} The implication (62) & (63) $\Rightarrow$ (60) is justified as follows. Using the decomposition $\tau = \varphi\tau + (1-\varphi)\tau$ where φ is the characteristic function of a ball $B(0)$ we see that $f \times \tau \in L^2(X)$ for $f \in \mathcal{D}^\natural(X)$. Since $\sigma \in L^1(X)$ we have $f \times \tau \times \sigma \in L^2(X)$. Now (60) follows since by the Plancherel theorem the spherical transform is injective on L^2.

155^3 From formula (24) below for $j = 0$ and $j = 1$, it is clear that sequences $\delta_1, \delta_2, \ldots, M_1, M_2, \ldots (\delta_i > 0, M_1 > 0)$ exist such that (3) holds for $j = 0$, $j = 1$. Fix the δ_1 and M_1. Then the idea is to shrink $\delta_2, \delta_3 \ldots$ and $1/M_2, 1/M_3, \ldots$ so that by the argument below, (3) holds for $j = 2$, etc.

167^{13} (60) should be (61). It should also be observed as a result of (39) that if $f(x) = O(|x|^{-N})$ then $I^\lambda f)(x)$ is holomorphic near $\lambda = 0$ and $I^0 = f$.

168_{11} The idea of a proof of this nature involving a contour like Γ_m appears already in Ehrenpreis [1956], although not correctly carried out in details.