

Werk

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It holds

$$\left| \int_0^t \frac{d\tau}{\sqrt{(\tau) \ln \tau}} \right| \leq \frac{1}{|\ln t|} \int_0^t \frac{d\tau}{\sqrt{\tau}} = 2 \frac{\sqrt{t}}{|\ln t|}$$

and hence

$$\begin{aligned} (10) \quad |I_1| &= \left| \int_a^{(1/2)(\pi t)^{-1/2}} dc \int_0^t \frac{d\tau}{\sqrt{(\tau) \ln \tau}} \right| \leq \int_a^{(1/2)(\pi t)^{-1/2}} \frac{2\sqrt{t}}{|\ln t|} dc = \\ &= \frac{1}{\sqrt{(\pi) |\ln t|}} - \frac{2a\sqrt{t}}{|\ln t|} \rightarrow 0 \quad \text{for } t \rightarrow 0+. \end{aligned}$$

We obtain from (7) that

$$(11) \quad |I_2| \leq \frac{1}{2\pi |\ln t| \sqrt{t}} \int_{1/2(\pi t)^{-1/2}}^{\infty} \frac{dc}{c^2} = \frac{1}{2\pi |\ln t| \sqrt{t}} 2 \sqrt{(\pi t)} \rightarrow 0$$

for $t \rightarrow 0+$. (9) follows from (10) and (11). Since $f_a(t) \rightarrow 0$ monotonically for $a \rightarrow +\infty$ and since the functions f_a are continuous, it is seen from Dini's theorem that $f_a(t) \rightarrow 0$ for $a \rightarrow +\infty$ uniformly on the interval $\langle 0, e^{-1} \rangle$. Thus we see that the condition (3'') is fulfilled and the potential G_μ (where $\mu = \delta_0 \otimes \lambda$) is uniformly continuous on R^2 .

References

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- [4] S. Mrzena: Continuity of heat potentials (to appear).

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