My Japanese book, Theory of Besov spaces, including a remark on the space S' over P

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Let $\mathcal{S}'$ denote the set of all Schwartz distributions and $\mathcal{P}$ the set of all polynomials. If we define $\mathcal{S}_\infty$ to be the set of all $f \in \mathcal{S}$ such that $\int_{\mathbb{R}^n} x^\alpha f(x)\,dx = 0$ for all α, we can consider the dual space $\mathcal{S}'_\infty$.

We know that $\mathcal{S}'_\infty$ is isomorphic to $\mathcal{S}'/\mathcal{P}$ as linear spaces. But it seems to me that this is true topologically. In my Japanese book, I wrote a proof but I have commited the mistake. But recently I modified the proof. My result is as follows.

THEOREM. *Equip $\mathcal{S}'$ and $\mathcal{S}'_\infty$ with the weak star topology. Then the restriction mapping from $\mathcal{S}'$ to $\mathcal{S}'_\infty$ is open.*

References

[1] S. Nakamura, T. Noi, Y. Sawano, "Generalized Morrey spaces and trace operator" (to appear).

[2] Y. Sawano, *Theory of Besov Spaces*, Nihon-Hyoronsha, 2011 (in Japanese), 440 pp.