Minor typo: At the last line of page 3, the condition

$$\int_{\mathbb{R}^{n'+1}} |P_x[\exp\{u \cdot \mathcal{Z}_{z,y}\}]|^p du < \infty$$

is apparently strange. This should be

$$\int_{\mathbb{R}^{n'+1}} |P_x[\exp\{iu \cdot \mathcal{Z}_{z,y}\}]|^p du < \infty,$$

which is an integrability condition for the characteristic function of $\mathcal{Z}_{x,y}$ under P_x.