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## **HARMONIC ANALYSIS ON THE LAGUERRE HYPERGROUP AND APPLICATIONS**

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We introduce a new harmonic analysis on the Laguerre hypergroup. We study the continuity of generalized pseudo-differential operator  $B_{\sigma,\alpha}$  on Sobolev-Laguerre space and its dual in the class of symbols. Also, we give the analogous result related to the commutator  $[B_{\sigma,\alpha}, I_\varphi]$  where  $I_\varphi = \mathcal{F}^{-1}(\varphi\mathcal{F}(\cdot))$ .  $\varphi$  is being a suitable function and  $\mathcal{F}$  is the Laguerre Fourier transform.

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