

G-type spaces of ultradistributions over \mathbb{R}_+^d

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This lecture is devoted to the G-type spaces i.e. the spaces $G_\alpha^\alpha(\mathbb{R}_+^d)$, $\alpha \geq 1$ and their duals which can be described as analogous to the Gelfand-Shilov spaces and their duals but with completely new justification of obtained results. The Laguerre type expansions of the elements in $G_\alpha^\alpha(\mathbb{R}_+^d)$, $\alpha \geq 1$ and their duals characterise these spaces through the exponential and sub-exponential growth of coefficients. We provide the full topological description and by the nuclearity of $G_\alpha^\alpha(\mathbb{R}_+^d)$, $\alpha \geq 1$ the kernel theorem is proved.

As application, a class of the Weyl pseudo-differential operators is extended to one with the radial symbols with the exponential and sub-exponential growth rate.

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