

# Hörmander Spaces on Manifolds and Their Applications

*Institute of Mathematics, Kyiv, Ukraine*

*E-mail: <sup>1</sup>mikhailets@imath.kiev.ua, <sup>2</sup>murach@imath.kiev.ua*

The talk is devoted to a certain class of isotropic Hilbert Hörmander spaces of distributions. They are parameterised by a weight function that is OR-varying at infinity (in the sense of V. G. Avakumović). We introduce such Hörmander spaces on a closed compact smooth manifold. We give different equivalent definitions of these spaces in terms of local properties of distributions, by means of interpolation of Hilbert Sobolev spaces with function parameters, and as domains of some functions of Beltrami-Laplace operator given on the manifold. The definitions are similar to those used for the Sobolev spaces.

We find applications of the Hörmander spaces on manifolds to the interpolation of the Sobolev spaces, to elliptic pseudodifferential operators, to the investigation of the convergence of spectral expansions in eigenfunctions of self-adjoint elliptic operators [1].

In particular, we prove that the introduced class of Hörmander spaces coincides with the class of all Hilbert spaces that have an interpolation property with respect to the Hilbert Sobolev scale.

[1] V. A. Mikhailets, A. A. Murach *Dopov. Nats. Acad. Nauk. Ukr.* 3, (2009), p. 29-35.