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Decreasing Rearrangements and Lorentz variant Herz Space

The notion of decreasing rearrangements is an important tool in analysis, playing a vital role in various inequalities. This notion allows us to construct a non-negative, non-decreasing function f^* on the interval $[0, \infty)$ for every measurable function f on any arbitrary σ-finite measure space. The decreasing function f^* encodes information about the properties of the original function f. One remarkable application of this notion is the discovery of Lorentz spaces. On the other hand the Herz space $K^a_{p,q}$ was introduced in connection with the Lipschitz spaces and last few decades, these spaces have been extensively studied in various directions. In this talk we refine the classical Herz spaces $K^a_{p,q}$ by introducing a class of functions called Herz-Lorentz spaces $HL^{a,r}_{p,q}$. The authors study a few properties these spaces in the framework of Banach function spaces. We also discuss the completeness of these spaces and give some embedding results.

References.

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