

## Boehmians of $L^2$ -Growth

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Using convolution and approximate identities (delta sequences), a space  $\beta_{L^2}$  of generalized functions is constructed. The space of distributions  $D'_{L^2}$  of  $L^2$ -growth is continuously embedded into  $\beta_{L^2}$ . The Fourier transform is a continuous linear operator from  $\beta_{L^2}$  into the space of locally square-integrable functions. After briefly discussing the uncertainty principle for the Fourier transform, an example of an element  $W \in \beta_{L^2} \setminus D'_{L^2}$  which does not vanish on any interval is constructed.