FOURIER ANALYSIS BETWEEN HYPERFUNCTIONS AND DISTRIBUTIONS

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In this talk we will show the naturalness of hyperfunctions comparing our results in the theory of hyperfunctions and the corresponding results in the Schwartz theory of distributions in such areas as the characterization of test function spaces in terms of Fourier transformations, Bochner–Schwartz theorem for (conditionally) positive definite (Fourier) hyperfunctions, (almost) periodic hyperfunctions and representation of generalized functions in terms of solutions satisfying some growth condition of the (Hermite) heat equation.

To obtain the above theorems of global nature in hyperfunctions we make use of the heat kernel method of Matsuzawa effectively which represents various generalized functions as initial values of smooth solutions of the heat equation satisfying suitable growth condition.

This is a joint work with J. Chung and S.-Y. Chung.