Workshop on Nonlinear Analysis and Control Theory in
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Spikes and Waves

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Abstract

An atomic measure on $\mathbb{R}^n$ is a crystalline measure if it is supported by a locally finite set and if its distributional Fourier transform is also supported by a locally finite set. Crystalline measures were introduced in 1959 by Andrew Guinand, Jean-Pierre Kahane, and Szolem Mandelbrojt. Crystalline measures play a seminal role in the following problem on Schwartz functions: One are given two locally finite sets E and F. We demand that the only Schwartz function f vanishing on E and whose Fourier transform vanishes on F be the zero function. Finally this investigation applies to the solution by Maryna Viazovska of the packing Kepler problem in dimension 8.

References

[1] D. Radchenko and M. Viazovska, *Fourier interpolation on the real line*, https://arxiv.org/abs/1701.00265C.

[2] J. Tropp *On the linear independence of spikes and sines*. Journal of Fourier analysis and applications. Vol. 14, pp. 838-858 (2008).