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The HRT Conjecture for real-valued functions

Given a non-zero square integrable function g and $\Lambda = \{(a_k, b_k)\}_{k=1}^N \subset \mathbb{R}^2$ let $\mathcal{G}(g,\Lambda) = \{e^{2\pi i b_k \cdot} g(\cdot - a_k)\}_{k=1}^N$. The Heil-Ramanathan-Topiwala (HRT) Conjecture is the question of whether $\mathcal{G}(g,\Lambda)$ is linearly independent. For the last two decades, very little progress has been made in settling the conjecture. In this talk, I will introduce an extension principle to investigate the HRT conjecture. More specifically, knowing that the conjecture holds for a given $g \in L^2(\mathbb{R})$ and a given set $\Lambda = \{(a_k, b_k)\}_{k=1}^N \subset \mathbb{R}^2$ I will characterize the set of all points $(a,b) \in \mathbb{R}^2 \setminus \Lambda$ such that the conjecture remains true for the same function g and the new set of point $\Lambda_1 = \Lambda \cup \{(a,b)\}$. I will illustrate this for the cases $N = 3$ and 5 and when g is a real-valued function.