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Diophantine approximation by linear forms with angular restrictions

Diophantine approximation by linear forms can be understood as follows: Given real numbers $\alpha_1, ..., \alpha_n$, one seeks integers $q_1, ..., q_n, p$ such that the value of the linear form $q_1\alpha_1 + \cdots + q_n\alpha_n - p$ is *small* in comparison to the size of $q_1, ..., q_n$ (consider the uncanny smallness of $2\pi + e - 9$, for example).

In this talk, we consider the case where the point $\mathbf{x} = (q_1, ..., q_n, p)$ is required to make a bounded angle with a prescribed subspace of $\mathbb{R}^{n+1}$. We give an optimal lower bound for the exponent of approximation in this context, which surprisingly only depends on the dimension of the prescribed subspace.

This is joint work with Damien Roy.