

## **Inverse Problems Network Meeting 6**

Thursday, 12<sup>th</sup> December 2019 - Friday, 13<sup>th</sup> December 2019

University of Manchester

### **Abstract of Talk**

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## **RESONATORS AND ANTENNAS FROM SUB-RIEMANNIAN GEOMETRY**

Prof Alan Greenleaf

University of Rochester

I will describe work with Slava, some of it published and some not, on designing two- and three-dimensional arrays of metamaterials that behave as if they are higher dimensional in various ways. Based on ideas from sub-Riemannian geometry, these have higher counts of resonant frequencies and/or stronger focussing of waves than one would expect from their physical dimension, a phenomenon we call superdimensionality. Examples are based on Grushin-type operators and the sub-Laplacian on the Heisenberg group.

This is joint work of Slava with Henrik Kettunen, Matti Lassas, Gunther Uhlmann and myself.