1162-32-171 **Yonatan Shelah*** (yonshel@umich.edu), Ann Arbor, MI. *An Inverse Spectral Problem for the Leray Transform in Two Settings.* Preliminary report.

I will investigate the inverse spectral problem for the Leray transform on a class of Reinhardt domains in $\mathbf{C}^2$, which are C^2 away from the axes and satisfy milder smoothness conditions on the axes. The spectrum was calculated by L. Lanzani and D. Barrett in a 2009 paper, where the eigenvalues were marked according to the Fourier decomposition. This gives rise to the notion of a marked spectrum, indexed by $\mathbf{Z}^2_{\geq 0}$. I will highlight the following topics:

1. To what extent does the marked spectrum determine the Reinhardt domain? There is a measure approach to this question by considering different limit distributions of eigenvalues. This recovery process can only be done up to dilations, variable swap and the duality map, but is that it? This is true at least in some cases.

2. I will show that there is a remarkable analogy with the setting of what's called rigid Hartogs domains in $\mathbf{C}^2$, which are given by $\mathrm{Im}(z_2) > f(|z_1|)$, where f is a C^2 real-valued function on $(0, \infty)$ with some regularity conditions at the endpoints. The marked spectrum is indexed by $\mathbf{Z}_{\geq 0} \times \mathbf{R}_{<0}$, but the general recovery algorithm is essentially unchanged. This is joint work with L. Edholm. (Received August 31, 2020)