

# TEMPLE UNIVERSITY

Department of Mathematics

## Analysis Seminar

Zoom meeting

Monday, March 1 2021, 2:30 p.m.

*Smoothing effect and Strichartz estimates for  
some time-degenerate Schrödinger operators*

by Serena Federico

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Abstract: In this talk we will analyze the smoothing effect and the validity of Strichartz estimates for some classes of time-degenerate Schrödinger operators. In the first part of the talk we will investigate the local smoothing effect (both homogeneous and inhomogeneous) for time-degenerate Schrödinger operators of the form

$$\mathcal{L}_{\alpha,c} = i\partial_t + t^\alpha \Delta_x + c(t,x) \cdot \nabla_x, \quad \alpha > 0,$$

where  $c(t,x)$  satisfies suitable conditions. Additionally, we will employ the smoothing effect to prove local well-posedness results for the associated nonlinear Cauchy problem.

In the second part of the talk we will analyze Strichartz estimates for a class of operators similar to the previous one, that is of the form

$$\mathcal{L}_b := i\partial_t + b'(t)\Delta_x,$$

with  $b'$  satisfying suitable conditions. An application of these estimates will give a (different) local well-posedness result for a semilinear Cauchy problem associated with  $\mathcal{L}_b$ .