



MATHEMATICS COLLOQUIUM

Wave models with time-dependent mass and dissipation

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Abstract: We discuss the Cauchy problem for linear wave models with time-dependent mass and dissipation

$$u_{tt} - \Delta u + b(t)(-\Delta)^\delta u_t + m(t)^2 u = 0, \quad u(0, x) = u_0(x), \quad u_t(0, x) = u_1(x),$$

where $\delta \in [0, 1]$. In the first part of the colloquium we discuss the constant coefficient case. Here we show the influence of the mass term $m^2 u$, of the external damping term $b u_t$ and of the structural damping term $b(-\Delta)^\delta u_t$, $\delta \in (0, 1]$, on qualitative properties of solutions. The second part of the colloquium is addressed to the influence of time-dependent coefficients on properties of solutions. We will explain, for example, scattering states, energy decay, but also the non-expected overdamping effect. What about the interplay of mass and damping terms? This question will be answered from different points of view. Some open problems and further projects complete the talk.

Date: **Thursday, November 5, 2015**

Time: 3:05pm-4:05pm

Place: MAGC 1.302

Refreshments will be served at 2:45pm

For further information, or for special accommodations contact Dr. Zhijun Qiao via email at zhi-jun.qiao@utrgv.edu or at 956-665-3406