1063-37-88 **Michel L Lapidus*** (lapidus@math.ucr.edu), Department of Mathematics, University of California, Riverside, CA 92521-0135. *Fractal Geometry and Dynamical Systems: From Fractal Drums and Strings to Fractal Billiards.* Preliminary report.

In this talk, we will attempt to discuss several points of contact between the theory of (continuous or discrete) dynamical systems and fractal geometry, particularly in connection with the vibrations of fractal strings and drums. This discussion may involve joint work with Machiel van Frankenhuisjen (for the general theory of fractal strings and their complex dimensions), John Rock as well as Katie Ellis and Michael Mackenzie (for multifractal zeta functions associated with iterated function systems), Hung Lu (for p-adic self-similar strings and dynamical systems), Nishu Lal (for multivariable complex dynamical systems associated with the spectra of Laplacians on fractals) and (for the still nascent theory of fractal billiards), Robert Niemeyer, in addition to work (in progress) of the author on continuous flows on moduli spaces of fractal membranes (cf., in particular, the author's book "In Search of the Riemann Zeros: Strings, Fractal Membranes and Noncommutative Spacetimes". Amer. Math. Soc., 2008) . (Received August 08, 2010)