

abstract

GEOMETRIC PDE SEMINAR

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

Given two differential equations it is often useful to know invariants which guarantee that there exists a transformation of variables (independent, dependent or both) that transforms one of the equations into the other. Recently it has been observed, that various classes of ODEs and PDEs, when considered modulo some specific kinds of transformations of the variables, fall into nonequivalent classes of equations, whose local invariants are conformal invariants of appropriately defined pseudo-riemannian metrics on manifolds. In this talk we provide some examples of this phenomenon. The most striking of them associates a conformal 5-dimensional geometry of signature (2, 3), with the equation $z' = F(x, y, y', y'', z)$. This conformal geometry has Cartan normal conformal connection reduced from $so(3,4)$ Lie algebra to the exceptional g_2 Lie algebra. This implies in particular that Cartan's invariants of 2-dimensional nonintegrable distributions in dimension five are just conformal invariants of this (2,3)-signature conformal geometry.