

TEMPLE UNIVERSITY MATHEMATICS COLLOQUIUM

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will speak on

The Non-Noetherianity of the Denjoy–Carleman Quasianalytic Rings

ABSTRACT: The Denjoy–Carleman quasianalytic classes are subrings of the ring of smooth functions consisting of functions with Taylor expansions that do not necessarily converge but on which the Taylor morphism is injective, i.e. a function with zero derivatives up to infinite order is the zero function. Usually studied by analysts, these classes also have fascinating algebraic properties including that they fail to possess the Weierstrass Division Property. As a result, the standard inductive argument used for holomorphic and real-analytic functions to prove Noetherianity cannot be carried out. Whether these Denjoy–Carleman classes are Noetherian or non-Noetherian rings has thus been an open problem since 1976.

I will discuss very recent work on this problem using methods from model theory that I have done jointly with Liat Kessler (MIT). No background is assumed. I will explain from scratch the analysis, algebra, and model theory that we use for our argument.

MONDAY, 1 DECEMBER 2008

LECTURE AT 4:00 PM

COFFEE, TEA, AND REFRESHMENTS FROM 3-5 PM

ROOM 617, WACHMAN BUILDING
DEPARTMENT OF MATHEMATICS