

Department of Mathematics and Statistics COLLOQUIUM

Universal structures: *The countable random graph, the surreal numbers, and the hypnago- gic digraph*



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I'll give an introduction to universal structures in mathematics, where a structure M is universal for a class of structures if every structure in that class arises as a substructure of M . For example, Cantor proved that the rational line is universal for all countable linear orders. Is a corresponding fact true of the real line for linear orders of that size? Are there countably universal partial orders? Is there a countably universal graph? Is there a countably universal group? We'll answer all these questions and more, with an account of the countable random graph, generalizations to the random graded digraphs, Fraïssé limits, the role of saturation, the surreal numbers, and the hypnagogic digraph. The talk will conclude with some very recent work on universality amongst the models of set theory. Commentary concerning the talk can be made at: <http://jdh.hamkins.org/universal-structures-swarthmore-october-2013>.

TUESDAY, OCTOBER 8

SCIENCE CENTER 199

Refreshments 4:15

Talk 4:30

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