Mathematics, Statistics, and Computer Science   **@ UIC**

Graduate Student Colloquium

Forcing and the Continuum Hypothesis

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Abstract: After proving that the real numbers are uncountable, one is naturally led to the Continuum Hypothesis (denoted CH), proposed originally by Georg Cantor. CH asserts that every infinite subset of the reals is either countable or has the same cardinality as the reals. Cantor spent much of his life trying to prove CH true, but to no avail. In fact, resolving CH became the first of Hilbert's 23 problems, proposed in 1900.

Around 40 years later, progress was made towards a solution when Gödel showed that the CH could not be proven false. However, in 1963, Paul Cohen shocked the world and proved that CH could not proven true either. In doing so, Cohen developed an incredibly powerful mathematical technique called forcing, still widely used today in modern set theoretic research.

In this talk, we discuss the independence phenomena, discuss the background of forcing, and sketch how Cohen's forcing was used to prove the independence of CH.

Wednesday, March 13 at 5:00 PM in 636 SEO