HONOURS SEMINAR

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On the Universal Surjectivity of the Cantor Set

Friday, December, 11, 2020
10:00 a.m.
Via Zoom

Abstract:

In his 1883 paper on point set topology of the real line, Georg Cantor was the first mathematician to define a perfect set. Cantor presented a subset on the unit interval, now known as the Cantor set, as an example. Though this set originally appears to be artificially constructed to display several counter-intuitive properties, it later became of particular importance not only in set theory but as a tool in many areas of mathematics. The Cantor set was shown to be topologically unique and universally surjective in 1927 by Felix Hausdorff in the second edition of *Mengenlehre* and in an article by P.S. Alexandroff in the same year.

In this talk we will prove the universal surjectivity of the Cantor set – that is, any compact metric space is the continuous image of the Cantor Set – and mention some of its many applications, such as space-filling curves.

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