

BI-CO MATHEMATICS COLLOQUIUM

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College

"THE CHURCH-TURING THESIS AND ITS CONTROVERSY"

Monday, February 10, 2014

Talk at 4:00 – H109

Tea at 3:30 – KINSC Math Lounge, H208

Abstract:

In 1936, Alan Turing wrote a revolutionary paper in which he described what we now call a Turing machine. He argued that any function from the natural numbers to itself is computable by some algorithm that a human could execute (given unlimited time and memory) if and only if the function is computable by a Turing machine. This is what is known as the Church-Turing Thesis. Recently, there has been some debate about the Church-Turing thesis. Some people argue that it should be called a theorem instead of a thesis because it is definitely true, while there are others who argue that it isn't true at all and should be abandoned completely. Still others argue for something in between. We will discuss these various viewpoints, including what some say is Turing's "proof" of the thesis as well as the idea that quantum physics or general relativity can overturn the thesis and make it possible to compute things that we once thought were not computable.

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