

# MANY CHEERFUL FACTS

presents

## So Much for the 80's: $P=NP$ is Still Hard

a talk by Cameron Hill

12:10 pm - 1:00 on Wednesday, March 2nd, in room  
1015.

The P versus NP question is probably the most famous in theoretical computer science. Indeed, for many, this one question represents the whole field of complexity theory. But why is  $P=NP$  an interesting question, and why has it turned out to be so difficult to resolve? I will sketch a bit of the history of the question and the methods intended to resolve it, up to the so-called 'combinatorial methods' of the 1980s. I will then present a result of the 1990s which indicates that these methods have little or no hope of resolving  $P=NP$ .

*I am the very model of a modern Major General,  
I've information vegetable, animal, and mineral,  
I know the kings of England, and I quote the fights historical  
From Marathon to Waterloo, in order categorical;  
I'm very well acquainted, too, with matters mathematical,  
I understand equations, both the simple and quadratical,  
About binomial theorem I'm teeming with a lot o' news,  
With many cheerful facts about the square of the hypotenuse!*

- Gilbert & Sullivan  $P \circ P$