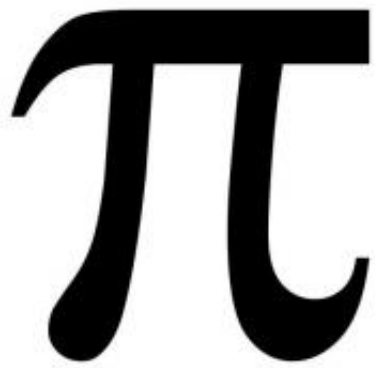
Pi enthusiast calculates it to ten trillion digits

October 20 2011, by Bob Yirka



(PhysOrg.com) -- Shigeru Kondo is a seriously committed guy. Ever since discovering he had an interest in calculating pi (aka π) back in his college days, he's been following the results achieved by others using massive supercomputers. Now, in his late 50's, with some help from Northwestern University grad school student Alexander Yee, he's succeeded in calculating pi to ten trillion digits; on a home built PC yet.

Pi, the mathematical constant that describes the ratio of a circle's circumference to its diameter, is generally rounded off to just two places, bringing it to 3.14. Believed to have been first described by Archimedes way back in the 3rd century BC, the ratio is used in all sorts of mathematical computations, not the least of which is in figuring out the area of a circle. But because pi is an irrational number, it's value cannot be written as an fraction which means when written as a decimal

approximation, it's numbers go on infinitely, and perhaps more importantly, never repeat.

For hundreds of years, pi has held fascination for mathematicians, scientists, philosophers and even regular run of the mill people. Why this is so is hard to say, and so too is the seemingly endless progression of people that have set before themselves the task of calculating its digits. In spite of that, it's possible that none has ever been so obsessed as Kondo. He's spent the better part of a year with the singular task of finding the ten trillionth digit, and of course all those past the five trillionth and one digit leading up to the ten trillionth, since he found the five trillionth digit just last year.

Finding the value of pi to 10 trillion digits requires performing a lot of calculations (using software written by Yee), so many in fact, that Kondo had to add a lot more hard drive space than you'd find on your average PC. Forty eight terabytes to be exact. So intense was the computation that the computer alone caused the temperature in the room to hold steady at 104° F.

Also, it's not as easy to keep a custom built super-sized PC going full steam ahead twenty four hours day for months on end, as it might seem. Hard drive failures and the threat of power disruption from the earthquake in Japan back in March threatened the project many times. And of course there was that power bill itself which ran to something close to $400 a month as the computer ground away.

But in the end, it was Kondo's persistence that paid off. For his efforts he will be forever known (in the annals of science, and probably the Guinness Book of World Records) as the man who calculated the ten trillionth digit of pi. It's 5.

More information:

www.numberworld.org/misc_runs/pi-10t/details.html
ja0hxv.calico.jp/pai/estart.html

10/21/2011: The story has been updated.