PrimeGrid's
Sophie Germain Prime Search

On 29 February 2016 05:39:14 UTC, PrimeGrid's Sophie Germain Prime Search found a World Record Sophie Germain prime:

$$2618163402417*2^{1290000}-1$$

The prime is 388,342 digits long, eclipsing the previous record of 200,701 digits. It enters Chris Caldwell's "The Largest Known Primes Database" (http://primes.utm.edu/primes) ranked 1st for Sophie Germain primes and 3,747th overall.

The discovery was made by Scott Brown of the United States using an Intel(R) Core(TM)2 Quad CPU Q6700 @ 2.66GHz with 4 GB RAM running Microsoft Windows 7 Enterprise. This computer, using LLR, took about 1 hour and 33 minutes to complete the primality test. Scott is a member of the Duke University team.

The prime was verified on 29 February 2016 06:21:47 UTC, by Vaughan Davies of Australia using an Intel(R) Core(TM) i7-4770S CPU @ 3.10GHz with 32 GB RAM running Microsoft Windows 7 Ultimate. This computer, using LLR, took about 47 minutes to complete the primality test. Vaughan is a member of the AMD Users team.

Credits for the discovery are as follows:

1. Scott Brown (United States), discoverer
2. PrimeGrid, et al.
3. TwinGen, sieving program developed by David Underbakke
4. LLR, primality program developed by Jean Penné

Entry in "The Largest Know Primes Database" can be found here:
https://primes.utm.edu/primes/page.php?id=121331 Sophie Germain (2p+1)
https://primes.utm.edu/primes/page.php?id=121330 Sophie Germain (p)

If both p and $2p$+1 are prime, then p is a Sophie Germain prime. The first few Sophie Germain primes are 2, 3, 5, 11, 23, 29, 41, 53, 83, 89, 113, and 131.

The search took a little over 3 years with more than 20,000 users completing a little over 37 million tests. Over 2,100 single primes were found and added to the Top 5000 list. Just over 26% of the sieved search space was exhausted before the twins were found. This is PrimeGrid's 2nd World Record Sophie Germain prime.

The search effort would have taken hundreds of years on a fast single core PC. Therefore, this timely discovery would not have been possible without the thousands of volunteers who contributed their spare CPU cycles. A special thanks to everyone who contributed their advice and/or computing power to the search - especially David Underbakke who was instrumental with advice and research. Additional thanks goes to Lennart Vogel for doing the tedious sieve work.

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About PrimeGrid

PrimeGrid is a distributed computing project, developed by Rytis Slatkevičius, Lennart Vogel, and John Blazek, which utilizes BOINC and PRPNet to search for primes. PrimeGrid's primary goal is to bring the excitement of prime finding to the "everyday" computer user. Simply download the software and let your computer do the rest. Participants can choose from a variety of prime forms to search. With a little patience, you may find a large or even record breaking prime.

BOINC

The Berkeley Open Infrastructure for Network Computing (BOINC) is a software platform for distributed computing using volunteered computer resources. It allows users to participate in multiple distributed computing projects through a single program. Currently BOINC is being developed by a team based at the University of California, Berkeley led by David Anderson.

This platform currently supports projects from biology to math to astronomy. For more information, please visit BOINC: http://boinc.berkeley.edu

PRPNet

PRPNet is a client/server application written by Mark Rodenkirch that is specifically designed to help find prime numbers of various forms. It is easily ported between various OS/hardware combinations. PRPNet does not run each PRP test itself, but relies on helper programs, such as LLR, PFGW, phrot, and genefer to do the work.

For more information, please visit PrimeGrid's PRPNet forum thread: http://www.primegrid.com/forum_thread.php?id=1215

For more information about PrimeGrid and a complete list of available prime search