PrimeGrid's
Sophie Germain Prime Search

On 9 April 2012 6:31:14 UTC, PrimeGrid's Sophie Germain Prime Search found a World Record Sophie Germain prime:

$$18543637900515*2^{666667}-1$$
(2p+1: 18543637900515*2^666668-1)

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 prime is 200,701 digits long, eclipsing the previous record of 79,911 digits. It enters Chris Caldwell's "The Largest Known Primes Database" (http://primes.utm.edu/primes) ranked 1st for Sophie Germain primes.

The discovery was made by Philipp Bliedung of the United States using an Intel Core i7 950 @ 3.07GHz with 12 GB RAM running Linux. This computer, using LLR, took 32 minutes and 10 seconds to complete the primality test. Philipp is a member of the USA team.

The prime was verified on 9 April 2012 9:36:15 UTC, by Lee Blyth of Australia using an Intel Core i7 2600k @ 3.40GHz with 8 GB RAM running Windows 7 Ultimate. This computer, using LLR, took 14 minutes and 26 seconds to complete the primality test. Lee is a member of the Ishtar team.

Credits for the discovery are as follows:

1. Philipp Bliedung
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:
http://primes.utm.edu/primes/page.php?id=106227 Sophie Germain (2p+1)
http://primes.utm.edu/primes/page.php?id=106226 Sophie Germain (p)

The search took almost 3 years with more than 20,000 users completing just over 32 million tests. Over 3000 single primes were found...~2900 of these were added to the Top 5000 list. Just over 96% of the sieved search space was exhausted before the prime was found. This is PrimeGrid's 1st 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.

PrimeGrid's Sophie Germain Prime Search will continue to search for even larger Sophie Germian Primes. To join the search please visit PrimeGrid:
http://www.primegrid.com

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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 projects, please visit: http://www.primegrid.com