PrimeGrid's
Proth Prime Search

On 13 June 2012, 17:32:29 UTC, PrimeGrid's Proth Prime Search project, through PRPNet, found a prime Fermat divisor:

$$1705*2^{906110}+1 \text{ Divides } F(906108)$$

The prime is 272,770 digits long and will enter Chris Caldwell's "The Largest Known Primes Database" (http://primes.utm.edu/primes) ranked 9th for prime Fermat divisors and 2359th overall. It is the 6th divisor found in 2012 (4th by PrimeGrid) and 298th overall. Additionally, it ranks 1st in the *Weighted Record Primes* of this type at the Prime Pages.

The discovery was made by Robert Boniecki of the United States using an Intel Core i7-920 @ 2.67GHz with 6GB RAM running Windows 7 Professional x64. This computer completed the primality test in 994.555 seconds using LLR.

The prime was verified by Stefan Wakolbinger of team Fair-Crunchers@Austria.

The credits for the discovery are as follows:

1. Robert Boniecki (United States), discoverer
2. PrimeGrid, et al.
3. Srsieve, sieving program developed by Geoff Reynolds
4. PSieve, sieving program developed by Ken Brazier and Geoff Reynolds
5. LLR, primality program developed by Jean Penné
6. OpenPFGW, a primality program developed by Chris Nash & Jim Fougeron with maintenance and improvements by Mark Rodenkirch

Entry in "The Largest Know Primes Database" can be found here:
http://primes.utm.edu/primes/page.php?id=107685

Fermat number divisibility (including generalized and extended) was checked by OpenPFGW using the following settings: -gxo 1705*2^906110+1 . For more information about Fermat and generalized Fermat number divisors, please see Wilfrid Keller's sites:

- http://www.prothsearch.net/fermat.html
- http://www1.uni-hamburg.de/RRZ/W.Keller/GFNfacs.html

No generalized or extended generalized Fermat number divisors were discovered.

Using a single PC would have taken years to find this prime. So 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 all the sievers who work behind the scenes to make a find like this possible.

This is PrimeGrid's 12th prime Fermat divisor. The Proth Prime Search will continue to search for more 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, wwww, 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