

PrimeGrid's Extended Sierpinski Problem Prime Search

On 3 April 2018, 15:55:55 UTC, PrimeGrid's Extended Sierpinski Problem Prime Search project found the Mega Prime:

$$193997 \cdot 2^{11452891} + 1$$

The prime is 3,447,670 digits long and will enter Chris Caldwell's "The Largest Known Primes Database" (<http://primes.utm.edu/primes>) ranked 23th overall. This find eliminates $k=193997$; 10 k 's remain in the Extended Sierpinski Problem.

The discovery was made by Tom Greer of the United States using an Intel(R) Xeon(R) E5-2620 v3 CPU @ 2.40GHz with 16GB RAM, running Microsoft Windows 10. This computer took about 3 hours 45 minutes to complete the primality test using multithreaded LLR. Tom is a member of the Sicturadastra. team.

The prime was verified on 4 April 2018, 00:17:20 UTC by Gary Bauer of the United States using an Intel(R) Core(TM) i7-8700K CPU @ 3.70GHz with 16GB RAM, running Microsoft Windows 10. This computer took about 2 hours 25 minutes to complete the primality test using multithreaded LLR.

Credits for the discovery are as follows:

1. Tom Greer (United States), discoverer
2. PrimeGrid, et al.
3. Srsieve, sieving program developed by Geoff Reynolds
4. LLR, primality program developed by Jean Penné
5. 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=124564>

OpenPFGW, a primality program developed by Chris Nash & Jim Fougeron, was used to check for Fermat Number divisibility (including generalized and extended). For more information about Fermat and generalized Fermat Number divisors, please see Wilfrid Keller's sites:

- <http://www.prothsearch.com/fermat.html>
- <http://www.prothsearch.com/GFNfacts.html>

No generalized and extended generalized Fermat number divisors were discovered with this prime find.

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.

The Extended Sierpinski Problem Prime Search will continue to seek primes for the remaining k values. To join the search please visit PrimeGrid: <http://www.primegrid.com>

PrimeGrid's Extended Sierpinski Problem Prime Search

About PrimeGrid

PrimeGrid is a distributed computing project, developed by Rytis Slatkevičius and currently managed by Iain Bethune, James Breslin, Scott Brown, Ulrich Fries, Michael Goetz, Roger Karpin, Rytis Slatkevičius, and Van Zimmerman.

PrimeGrid utilizes BOINC and PRPNet to search for primes with the primary goal of bringing 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, www, 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>