

PrimeGrid's AP27 Search

On 3 November 2016, 23:35:42 UTC, PrimeGrid's AP27 Search (Arithmetic Progression of 27 primes) found the progression of 26 primes:

$$149836681069944461+7725290*23\#*n \text{ for } n=0..25$$

The discovery was made by Takeshi Nakamura of Japan using a NVIDIA GTX 1070 on an Intel(R) Xeon(R) E5-2667 v3 @ 3.20GHz with 16GB RAM, running Windows 10 Core x64 Edition. This computer took about 30 minutes to process the task (each task tests 100 progression differences of 10 shifts each). Takeshi is a member of the BOINC@MIXI team.

The progression was verified on 4 November 2016 03:37:51 UTC, by James Nobis of the United States using an AMD Tahiti GPU on an AMD Opteron(tm) 3648 CPU running Linux. This computer took about 1 hour 21 minutes to process the task. James is a member of the Sicituradastra. team.

The AP26 will be listed in Jens Kruse Andersen's "Primes in Arithmetic Progression Records" page (<http://primerecords.dk/aprecords.htm>) under the section(s):

- All known AP24 to AP26 (<http://primerecords.dk/aprecords.htm#ap24>)

Credits for the discovery are as follows:

1. Takeshi Nakamura (Japan), discoverer
2. PrimeGrid, et al.
3. AP26, a primality program originally developed by Jaroslaw Wroblewski, adapted to BOINC by Geoff Reynolds with maintenance and improvements by Bryan Little and Iain Bethune.

Using a single PC would have taken decades to find this progression, so this timely discovery would not have been possible without the thousands of volunteers who contributed their spare CPU (and GPU) cycles. A special thanks to everyone who contributed their advice and/or computing power to the search.

Additional AP Information

How to search for 26 primes in arithmetic progression? by Jaroslaw Wroblewski

<http://www.math.uni.wroc.pl/~jwr/AP26/AP26v3.pdf>

Primes in arithmetic progression - Wikipedia

https://en.wikipedia.org/wiki/Primes_in_arithmetic_progression

Prime Arithmetic Progression - Wolfram MathWorld

<http://mathworld.wolfram.com/PrimeArithmeticProgression.html>

arithmetic sequence - The Prime Glossary at the Prime Pages

<http://primes.utm.edu/glossary/page.php?sort=ArithmeticSequence>

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The 26 terms of the AP26

149836681069944461+7725290*23#*n for n=0..25

23#=2*3*5*7*11*13*17*19*23=223092870

149836681069944461+7725290*223092870*0=149836681069944461
149836681069944461+7725290*223092870*1=151560138187626761
149836681069944461+7725290*223092870*2=153283595305309061
149836681069944461+7725290*223092870*3=155007052422991361
149836681069944461+7725290*223092870*4=156730509540673661
149836681069944461+7725290*223092870*5=158453966658355961
149836681069944461+7725290*223092870*6=160177423776038261
149836681069944461+7725290*223092870*7=161900880893720561
149836681069944461+7725290*223092870*8=163624338011402861
149836681069944461+7725290*223092870*9=165347795129085161
149836681069944461+7725290*223092870*10=167071252246767461
149836681069944461+7725290*223092870*11=168794709364449761
149836681069944461+7725290*223092870*12=170518166482132061
149836681069944461+7725290*223092870*13=172241623599814361
149836681069944461+7725290*223092870*14=173965080717496661
149836681069944461+7725290*223092870*15=175688537835178961
149836681069944461+7725290*223092870*16=177411994952861261
149836681069944461+7725290*223092870*17=179135452070543561
149836681069944461+7725290*223092870*18=180858909188225861
149836681069944461+7725290*223092870*19=182582366305908161
149836681069944461+7725290*223092870*20=184305823423590461
149836681069944461+7725290*223092870*21=186029280541272761
149836681069944461+7725290*223092870*22=187752737658955061
149836681069944461+7725290*223092870*23=189476194776637361
149836681069944461+7725290*223092870*24=191199651894319661
149836681069944461+7725290*223092870*25=192923109012001961

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About PrimeGrid

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

PrimeGrid is hosted by Rackspace, and their generous contributions have helped make this project possible.

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>