

PrimeGrid's AP27 Search

On 5 September 2017, 08:23:41 UTC, PrimeGrid's AP27 Search (Arithmetic Progression of 27 primes) found the progression of 26 primes:

$$48277590120607451+37835074*23\#*n \text{ for } n=0..25$$

It is the 7th known AP26 known to exist, and the fourth found at PrimeGrid.

The discovery was made by Bruce E. Slade of the United States using a NVIDIA GTX 970 GPU in an Intel(R) Core(TM) i3-6100 @ 3.70GHz CPU with 16GB RAM, running Microsoft Windows 10 Core Edition. This computer took about 41 minutes to process the task (each task tests 100 progression differences of 10 shifts each). Bruce is a member of the Aggie The Pew team.

The progression was verified on 5 September 2017 19:34:24 UTC, by Axel Schneider of Germany using an NVIDIA GTX 680 GPU on an Intel(R) Core(TM)2 Quad Q9400 CPU @ 2.66GHz running Microsoft Windows 7 Home Premium Edition. This computer took about 2 hours 6 minutes to process the task. Axel is a member of the SETI.Germany 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. Bruce E. Slade (United States), 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

48277590120607451+37835074*23#*n for n=0..25

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

48277590120607451+37835074*223092870*0=48277590120607451
48277590120607451+37835074*223092870*1=56718325365929831
48277590120607451+37835074*223092870*2=65159060611252211
48277590120607451+37835074*223092870*3=73599795856574591
48277590120607451+37835074*223092870*4=82040531101896971
48277590120607451+37835074*223092870*5=90481266347219351
48277590120607451+37835074*223092870*6=98922001592541731
48277590120607451+37835074*223092870*7=107362736837864111
48277590120607451+37835074*223092870*8=115803472083186491
48277590120607451+37835074*223092870*9=124244207328508871
48277590120607451+37835074*223092870*10=132684942573831251
48277590120607451+37835074*223092870*11=141125677819153631
48277590120607451+37835074*223092870*12=149566413064476011
48277590120607451+37835074*223092870*13=158007148309798391
48277590120607451+37835074*223092870*14=166447883555120771
48277590120607451+37835074*223092870*15=174888618800443151
48277590120607451+37835074*223092870*16=183329354045765531
48277590120607451+37835074*223092870*17=191770089291087911
48277590120607451+37835074*223092870*18=200210824536410291
48277590120607451+37835074*223092870*19=208651559781732671
48277590120607451+37835074*223092870*20=217092295027055051
48277590120607451+37835074*223092870*21=225533030272377431
48277590120607451+37835074*223092870*22=233973765517699811
48277590120607451+37835074*223092870*23=242414500763022191
48277590120607451+37835074*223092870*24=250855236008344571
48277590120607451+37835074*223092870*25=259295971253666951

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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 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>