Unitary Perfect Nos

8

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2827

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DEPARTMENT OF MATHEMATICS

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Professor Peter Hagis, Jr.
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Temple University
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Dear Professor Hagis:

I read with interest your paper "unitary amicable numbers" in the October Math. Comp., especially since I had anticipated the definition and some of your results in my dissertation (Tennessee, March 1970). One of my students did some work in Fall 1970 on a computer search for unitary amicable numbers, but we gave up thoughts of publication when we learned that Henri Cohen had found all pairs with smaller member less than 21.5 million (as well as all unitary sociable groups with 16 or fewer elements) - he somehow got 30 hours of computer time!

As a consequence of your Theorem 2 (which I also gave), it is easy to show that odd unitary amicable numbers must be incongruent modulo 4, with the corollary result that there are no odd unitary perfect numbers (as is known). I have made a similar conjecture for ordinary amicable numbers.

If there are unitary amicable numbers which are unitary multiples of different powers of 2, then each must be divisible by 256. If unitary amicable numbers always have the same power of 2, is it true that the odd parts are incongruent modulo 4?

Your Question 2 may possibly be strengthened to ask if there is a pair of unitary amicable numbers which share no common unitary divisor greater than 1.

I gave in an appendix to my dissertation a list of 610 unitary amicable pairs (a few of which are erroneous).

N1783 Finally, an update on unitary perfect numbers. Subbarao and Warren gave 6, 60, 90 and 87360 as the first four, and in 1969 I reported 2827
that 146,361,946,186,458,562,560,000 = $2^{18}3\cdot5^{4}7\cdot11\cdot13\cdot19\cdot37\cdot79\cdot109\cdot157\cdot313$ is also unitary perfect. Last year, I proved that this monstrosity is indeed the fifth such number; the proof, which is now being revised via computer, will appear in Canad. Math. Bull.

May I please have a reprint of your paper?

Sincerely yours,

Charles R. Wall

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