A set of Poulet numbers defined by an interesting relation between their prime factors

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Abstract. In this paper I make the following conjecture on Poulet numbers: There exist an infinity of Poulet numbers P2 obtained from Poulet numbers P1 in the following way: let d1 and dn be the least respectively the largest prime factors of the number P1, where P1 is a Poulet number; than there exist an infinity of Poulet numbers P2 of the form P1 + |P1 – dn^2|*d1, where |P1 – dn^2| is the absolute value of P1 – dn^2. Example: for Poulet number P1 = 1729 = 7*13*19 is obtained through this operation Poulet number P2 = 11305 (1729 – 19^2 = 1368 and 1729 + 1368*7 = 11305). Note that from 11 from the first 30 Poulet numbers (P1) were obtained through this method Poulet numbers (P2).

Conjecture:

There exist an infinity of Poulet numbers P2 obtained from Poulet numbers P1 in the following way: let d1 and dn be the least respectively the largest prime factors of the number P1, where P1 is a Poulet number; than there exist an infinity of Poulet numbers P2 of the form P1 + |P1 – dn^2|*d1, where |P1 – dn^2| is the absolute value of P1 – dn^2.

The set of Poulet numbers P2:
(ordered by the size of P1)

: 11305, obtained from P1 = 1729 = 7*13*19 (1729 – 19^2 = 1368 and 1729 + 1368*7 = 11305);

: 137149, obtained from P1 = 2047 = 23*89 (89^2 - 2047 = 5874 and 2047 + 5874*23 = 137149);

: 10585, obtained from P1 = 2465 = 5*17*29 (2465 – 29^2 = 1624 and 2465 + 1624*5 = 10585);

: 15841, obtained from P1 = 2821 = 7*13*31 (2821 – 31^2 = 1860 and 2821 + 1860*7 = 15841);

: 278545, obtained from P1 = 3277 = 29*113 (113^2 – 3277 = 9492 and 3277 + 9492*29 = 278545);

: 294409, obtained from P1 = 4033 = 37*109 (109^2 - 4033 = 7848 and 4033 + 7848*37 = 294409);

: 464185, obtained from P1 = 5461 = 43*127 (127^2 - 5461 = 10668 and 5461 + 10668*43 = 464185);

: 41041, obtained from P1 = 6601 = 7*23*41 (6601 - 41^2 = 4920 and 6601 + 4920*7 = 41041);

: 294409, obtained from P1 = 7957 = 73*109 (109^2 - 7957 = 3924 and 7957 + 3924*73 = 294409);

: 39865, obtained from P1 = 8911 = 7*19*67 (8911 - 67^2 = 4422 and 8911 + 4422*7 = 39865);

: 149281, obtained from P1 = 13981 = 11*31*41 (13981 - 41^2 = 12300 and 13981 + 12300*11 = 149281);

(...)

Notes:

The same Poulet number P2 can be obtained through this method from more than one Poulet number P1 (see 294409 obtained from both 4033 and 7957).

From 11 from the first 30 Poulet numbers (P1) were obtained through this method Poulet numbers (P2).