# Three sequences of primes obtained from Poulet numbers

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**Abstract.** In this paper I make the following three conjectures: (I) The set of the primes which are the sum of three consecutive Poulet numbers is infinite; (II) The set of the primes which are partial sums of the sequence of Poulet numbers is infinite; (III) The set of the primes which are obtained concatenating four consecutive 2-Poulet numbers is infinite.

**Conjecture I:**

The set of the primes which are the sum of three consecutive Poulet numbers is infinite.

The sequence of these primes:
: 2311 (= 561 + 645 + 1105);
: 3137 (= 645 + 1105 + 1387);
: 5021 (= 1387 + 1729 + 1905);
: 7213 (= 2047 + 2465 + 2701);
: 13421 (= 4369 + 4371 + 4681);
: 27653 (= 8481 + 8911 + 10261);
: 37847 (= 11305 + 12801 + 13741);
: 40289 (= 12801 + 13741 + 13747);
: 61673 (= 18721 + 19951 + 23001);
: 72139 (= 23001 + 23377 + 25761);
: 78479 (= 23377 + 25761 + 29341);
: 85223 (= 25761 + 29341 + 30121);
: 99719 (= 31621 + 33153 + 34945);
: 116239 (= 35333 + 39865 + 41041);
: 178909 (= 57421 + 60701 + 60787);
(...)

**Conjecture II:**

The set of the primes which are partial sums of the sequence of Poulet numbers is infinite.

The sequence of these primes:
: 7673 (the sum of Poulet numbers up to 1905);
: 17707 (the sum of Poulet numbers up to 2821);

:  33757  (the sum of Poulet numbers up to 4371);
:  270763  (the sum of Poulet numbers up to 18721);
:  484621  (the sum of Poulet numbers up to 31417);
:  615949  (the sum of Poulet numbers up to 34945);
:  691147  (the sum of Poulet numbers up to 39865);
:  863309  (the sum of Poulet numbers up to 46657);
:  962431  (the sum of Poulet numbers up to 49981);
:  1070309  (the sum of Poulet numbers up to 55245);
:  2576293  (the sum of Poulet numbers up to 91001);
:  4260049  (the sum of Poulet numbers up to 149281);
:  5542423  (the sum of Poulet numbers up to 172081);
:  5900473  (the sum of Poulet numbers up to 181901);
   (...)

**Conjecture III:**

The set of the primes which are obtained concatenating four consecutive 2-Poulet numbers is infinite.

The sequence of these primes:
:  341138720472701;
:  795783211026113747;
:  14491157091872119951;
:  31417316093162135333;
:  104653123251129889130561;
:  220729226801233017241001;
:  458989481573486737489997;
:  657901665281665333672487;
:  665281665333672487679729;
:  688213710533721801722201;
   (...)
Note that ten such primes are obtained using just the first hundred of 2-Poulet numbers (from 341 to 722201).