

**Kellner, Bernd C.; Sondow, Jonathan**

**The denominators of power sums of arithmetic progressions.** (English) Zbl 1423.11029

*Integers* 18, Paper A95, 17 p. (2018).

The authors study the denominators of polynomials that represent the power sums of arithmetic progressions:

$$\mathcal{S}_{m,r}^n(x) = \sum_{k=0}^{x-1} (km+r)^n = r^n + (m+r)^n + \cdots + ((x-1)m+r)^n.$$

They extend their earlier results on the case of power sum's (when  $r = 0, m = 1$ ). Specially, they give a simple explicit criterion for the integrality of the coefficients of these polynomials, and show further applications about the sequence of denominators of the Bernoulli polynomials.

Reviewer: Péter Pál Pach (Budapest)

**MSC:**

**11B25** Arithmetic progressions

**11B68** Bernoulli and Euler numbers and polynomials

Cited in **2** Documents

**Keywords:**

Bernoulli polynomial; denominator

**Software:**

[OEIS](#)

**Full Text:** [arXiv Link](#)

**References:**

- [1] G. Almkvist and A. Meurman, Values of Bernoulli polynomials and Hurwitz's zeta function at rational points, *C. R. Math. Acad. Sci. Soc. R. Can.* 13 no. 2–3 (1991), 104–108. · [Zbl 0731.11014](#)
- [2] A. Bazsó and I. Mező, On the coefficients of power sums of arithmetic progressions, *J. Number Theory* 153 (2015), 117–123.
- [3] A. Bazsó, A. Pintér, and H. M. Srivastava, A refinement of Faulhaber's theorem concerning sums of powers of natural numbers, *Appl. Math. Lett.* 25 no. 3 (2012), 486–489.
- [4] H. Cohen, *Number Theory, Volume II: Analytic and Modern Tools*, GTM 240, Springer–Verlag, New York, 2007. · [Zbl 1119.11002](#)
- [5] B. C. Kellner, On a product of certain primes, *J. Number Theory* 179 (2017), 126–141. · [Zbl 1418.11045](#)
- [6] B. C. Kellner and J. Sondow, Power-sum denominators, *Amer. Math. Monthly* 124 (2017), 695–709. · [Zbl 1391.11052](#)
- [7] N. E. Nørlund, *Vorlesungen über Differenzenrechnung*, J. Springer, Berlin, 1924.
- [8] V. V. Prasolov, *Polynomials*, D. Leites, transl., 2nd edition, ACM 11, Springer–Verlag, Berlin, 2010.
- [9] A. M. Robert, *A Course in p-adic Analysis*, GTM 198, Springer–Verlag, New York, 2000. *INTEGERS*: 18 (2018)17 · [Zbl 0947.11035](#)
- [10] H. G. Senge and E. G. Straus, PV-numbers and sets of multiplicity, *Period. Math. Hungar.* 3 (1973), 93–100. · [Zbl 0248.12004](#)
- [11] N. J. A. Sloane, ed., *The On-Line Encyclopedia of Integer Sequences*, <http://oeis.org>. · [Zbl 1044.11108](#)
- [12] C. L. Stewart, On the representation of an integer in two different bases, *J. Reine Angew. Math.* 319 (1980), 63–72.

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.