ADDENDUM TO 'ON THE LERCH ZETA FUNCTION'

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Professor L. Carlitz has been kind enough to point out that the functions $\beta_n(a, \alpha)$ which were used in [1] to evaluate the Lerch zeta function $\phi(x, a, s)$ for negative integer values of s have occurred elsewhere in the literature in other connections, for example in [2] and [3]. As Carlitz points out, formula (3.3) of [1] leads to the result

$$\alpha^m \beta_n(m, \alpha) - \beta_n(0, \alpha) = n \sum_{a=0}^{m-1} a^{n-1} \alpha^a$$

which, for integer values of the variable a, makes apparent the relation of the functions $\beta_n(a, \alpha)$ with the Mirimanoff polynomials discussed by Vandiver in [3].

There is a misprint in the next to last equation on p. 164 of [1]. The coefficient of $a^2/2$ in the expression for $\phi(x, a, -2)$ should read $i \cot \pi x + 1$ instead of $i \cot \pi x + 1/4$.

References

1. T. M. Apostol, *On the Lerch zeta function*, Pacific J. Math., **1**, (1951), 161-167.

2. L. Euler, *Institutiones calculi differentialis*, (II) 487-491.

3. H. S. Vandiver, *An arithmetical theory of the Bernoulli numbers*, Trans. Amer. Math. Soc., **51** (1942), 506.

4. G. Frobenius, *Uber die Bernoulli'schen Zahlen und die Euler'schen Polynome*, Sitzungsber. Akad. Wissensch. Berlin, **2** (1910), 826.

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