Abstract of paper [1].

We study averages of the quantity $R_{HL}(n) = \sum_{m_1+m_2=n} \Lambda(m_1)$. In particular, for any $k > 1$ we give an “explicit formula” for

$$\sum_{n\leq N} R_{HL}(n) \frac{(1-n/N)^k}{\Gamma(k+1)}$$

in terms of the Gamma function evaluated at suitable combinations of the Riemann zeta-function, and of Bessel functions of complex order.

References