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Karl Dilcher (dilcher@mathstat.dal.ca), Department of Mathematics, Dalhousie University, Halifax, Nova Scotia, Canada, and **Kirk Haller***, Department of Mathematics, Dalhousie University, Halifax, Nova Scotia, Canada. *Multiple zeta series via box splines.*

In the “language” of box splines, the Poisson summation formula is used to evaluate multiple series of the type

$$\sum_{j \in \mathbb{Z}^s} \frac{1}{(a_{11}j_1 + \dots + a_{s1}j_s - x_1)^{2m_1} \dots (a_{1n}j_1 + \dots + a_{sn}j_s - x_n)^{2m_n}},$$

where $a_{ij} \in \mathbb{Z}$ and $m_1, \dots, m_n \in \mathbb{N}$. The case $s = n$ is studied in greater detail, and a criterion for the factoring of the multiple series into a product of simple series is given. The case $x_1 = \dots = x_n = 0$ is also studied in detail. In all cases the sum of the multiple series is the product of an algebraic number and $\pi^{2(m_1 + \dots + m_n)}$. This can be seen as a generalization of Euler’s formula for the Riemann zeta function at even positive integers. (Joint work with Kirk Haller). (Received September 08, 2000)