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*$\mathbb{F}_p$ -codes, theta series, and the Hamming weight MacWilliams identity.*

We provide an analytic proof of the Hamming weight MacWilliams Identity for linear  $\mathbb{F}_p$ -codes via theta series inversion formulas. This generalizes the work of Hirzebruch, van der Geer, Choie, and Jeong for the Lee weight enumerator. (Received July 13, 2011)