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**Mahta Khosravi\*** ([khosravi@math.jhu.edu](mailto:khosravi@math.jhu.edu)), Department of Mathematics, Johns Hopkins University, Baltimore, MD. *Spectral Asymptotics on Heisenberg Manifolds and Related Problems in Analytic Number Theory.*

Let  $R(t)$  be the remainder term in Weyl's law for  $(2n + 1)$ -dimensional Heisenberg manifolds. Based on the Petridis-Toth conjecture  $R(t) = O_\delta(t^{n-1/4+\delta})$ . We discuss new moment results that provide evidence for this conjecture in three and higher dimensions. The methods used also allow a proof of a new fifth moment result for the error term  $\Delta(t)$  in the case of the Dirichlet divisor problem. (Received September 21, 2007)