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*Graph weights arising from Mayer and Ree-Hoover theories of virial expansions.* (English. French summary) [Zbl 1394.82003]


Summary: We study graph weights (i.e., graph invariants) which arise naturally in Mayer’s theory and Ree-Hoover’s theory of virial expansions in the context of a non-ideal gas. We give special attention to the Second Mayer weight \(w_M(c)\) and the Ree-Hoover weight \(w_{RH}(c)\) of a 2-connected graph \(c\) which arise from the hard-core continuum gas in one dimension. These weights are computed using signed volumes of convex polytopes naturally associated with the graph \(c\). Among our results are the values of Mayer’s weight and Ree-Hoover’s weight for all 2-connected graphs \(b\) of size at most 8, and explicit formulas for certain infinite families.

For the entire collection see [Zbl 1173.05001].

**MSC:**
- 82B05 Classical equilibrium statistical mechanics (general)  
- 05C22 Signed and weighted graphs  
- 05C90 Applications of graph theory

**Keywords:**
- graph invariants; non-ideal gas; hard sphere gas; Mayer weights; virial expansion

**Full Text:** Link