Abstract Submitted
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New look of fractional exclusion statistics[1] DRAGOS-VICTOR ANGHEL, Department of Theoretical Physics, Horia Hulubei National Institute of Physics and Nuclear Engineering — I discuss the concept of fractional exclusion statistics and I show that it leads to inconsistencies in the calculation of the particle distribution that maximizes the partition function. These inconsistencies appear when mutual exclusion statistics is manifested between different subspecies of particles in the system. In order to eliminate these inconsistencies, I introduce new mutual exclusion statistics parameters, which are proportional to the dimension of the Hilbert sub-spaces on which they act. These new definitions lead to properly defined particle distributions and thermodynamic properties. I also show that fractional exclusion statistics is manifested in general interacting systems and I calculate the exclusion statistics parameters. Most importantly, I prove that indeed, the mutual exclusion statistics parameters are proportional to the dimension of the Hilbert space on which they act.

Related publications:

[1] D. V. Anghel, J. Phys. A: Math. Theor. **40**, F1013 (2007).
[2] D. V. Anghel, Phys. Lett. A **372**, 5745 (2008).
[3] D. V. Anghel, arXiv:0804.1474.

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