Condensed-matter effects in μCF

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Condensed-matter effects in processes of the μCF cycle are considered. In particular, muonic hydrogen atom scattering from solid hydrogenic targets and resonant formation of the $dd\mu$ and $dt\mu$ molecules in such targets are studied. The method of response function S [1] is used for description of atom scattering in the condensed targets. Condensed-matter effects in the resonant formation are evaluated with the help of the resonant incoherent response function S_i [2]. Some theoretical results for the muonic atom scattering and for the resonant muonic molecule formation are presented. A comparison with available experimental results is performed. Remaining discrepancies between experiment and theory are especially discussed.

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[1] L. Van Hove, Phys. Rev. **95**, 249 (1954).
[2] A. Adamczak and M.P. Faifman, Phys. Rev. A **72**, 052501 (2005).