Freeing Slow Negative Muons Captured by Nuclei

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Friday Meeting
Neutrino Factory / Muon Collider
Collaboration
18 November 2005

Avoid Slow Muon Capture

- **Slow negative muons like to stick to nuclei**
- **Slow negative muons used by**

Inverse Cyclotron, physics/0510034

Frictional Cooling, NIM A546 (2005) 356

- **Deuterium gas. Fusion frees muons.**

10% sticking factor.

$d + d \rightarrow {}^3He + n + 3.3\,\mathbf{MeV}$ **or** $t + p + 4.0\,\mathbf{MeV}$**.**

L. Ponomarev, Contemp. Phys. 31 (1990) 219

- 2×10^{12} **fusions @ 30 Hz** $\rightarrow$ **35 watts**

Maximum muon kinetic energy = 4 MeV

Maximum muon momentum = 29 MeV/c

r(29 MeV/c) = 49 mm for 2 Tesla

So the ejected muon stays in the swarm.