LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS (LEPP)

Journal Club

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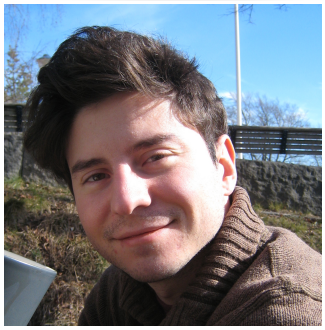

Next Generation Beam Dump Experiments to Search for Light Dark Matter

In a broad class of consistent models, MeV to few-GeV dark matter interacts with ordinary matter through weakly coupled GeV-scale mediators. A suitable meter-scale (or smaller) detector situated downstream of an existing electron beam-dump can sensitively probe dark matter interacting via sub-GeV mediators. These experiments can explore a well-motivated and otherwise inaccessible region of dark matter parameter space with sensitivity several orders of magnitude beyond existing direct detection constraints. This approach would also probe invisibly decaying new MeV-GeV gauge bosons ("dark photons") down to kinetic mixing of \epsilon ~ 10^{-4}, including the range of parameters relevant for explaining the (g-2)_{\mu} discrepancy. Sensitivity to other long-lived dark sector states and to new milli-charge particles would also be improved.

Friday

November 14, 2014

4:00pm

301 Physical Sciences Bldg.

LEPP and CHESS resources have merged and a new lab, (CLASSE), has formed. LEPP's primary source of support is the National Science Foundation.
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