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### LETTER OF RECOMMENDATION

It is a pleasure for me to support the application of **Dr. Sara Rydbeck** for a postdoctoral position at your institute.

Sara joined our group last fall after finishing an interesting thesis on dark matter in the group of Prof. Edsjo at Stockholm University. At present her main interest is the possible connection between dark matter and LHC physics. During the past year Sara first completed a relevant paper with Gustafsson and others on the “inert doublet model” of dark matter and related multi-lepton events at the LHC - an interesting scenario without supersymmetry. I expect that others will describe this work in more detail.

Sara then embarked in a new direction: decaying dark matter in supersymmetric models and related signatures at the LHC. Together with Sergei Bobrovskiy and Jan Hayer, she studied long-lived higgsinos as probes of gravitino dark matter in the case of small R-parity breaking. This work has led to several interesting results which are summarized in a recent paper. The higgsino decay rate can be directly related to the gravitino decay rate into photon and neutrino, and a significant parameter region can be probed already with the 8 TeV LHC data which are currently analyzed.

During the past year Sara has considerably broadened her research expertise. This concerns theoretical models as well as techniques and tools which are needed for LHC phenomenology, including SOFTSUSY, MADGRAPH, PYTHIA and SDECAY. Sara is a sincere young theorist, strongly motivated to pursue research in astroparticle physics and particle phenomenology. She is an active, and very friendly member of our group. I can strongly and without hesitation support her application!

Yours sincerely,

W. Buchmüller