

**From:** "spmartinniu@gmail.com" <spmartinniu@gmail.com>  
**Subject:** **Re: Meeting on CLIC detector benchmarks: 1400 (CERN)  
Monday 19th July**  
**Date:** July 16, 2010 5:32:48 AM GMT+02:00  
**To:** Marco Battaglia <Marco.Battaglia@cern.ch>, "thomson@hep.phy.cam.ac.uk" <thomson@hep.phy.cam.ac.uk>, Lucie Linssen <Lucie.Linssen@cern.ch>, Gian Giudice <Gian.Giudice@cern.ch>, "Jonathan R. Ellis" <John.Ellis@cern.ch>, Jan Fridolf Strube <jan.strube@stfc.ac.uk>, James Wells <james.wells@cern.ch>, Frederic Teubert <Frederic.Teubert@cern.ch>, Harry Weerts <weerts@anl.gov>, Jean-Jacques Blaising <Jean-Jacques.Blaising@cern.ch>, Marcel Stanitzki <m.m.stanitzki@rl.ac.uk>, Akiya Miyamoto <akiya.miyamoto@kek.jp>  
▶ 3 Attachments, 151 KB

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Hi everybody,

Following our discussion last Monday, James and I discussed some specific proposals for benchmark processes including model parameters. Attached is a file bench.pdf with seven proposed benchmark processes we came up with. This already exceeds the recommended number of detector-oriented benchmarks, so it is understood that choices must be made.

For the SUSY cases, the model parameters are chosen to give superpartner masses that are much smaller than the K' point; this does not saturate CLIC's physics reach but still should provide a favorable comparison with ILC and should be discoverable by LHC. (In addition, one could argue that very large masses are disfavored by considerations of "fine-tuning", whatever that is.) We also attempted to choose model parameters in reasonable agreement with the present data on dark matter,  $(g-2)$  of the muon,  $b \rightarrow s \gamma$ , and  $BR(B_s \rightarrow \mu\mu)$ , and of course Tevatron and LEP searches for the Higgs and superpartners. The models were defined by the output of Softsusy3.1.3, and the mentioned total cross-sections were found using Madgraph4. Besides the PDF file, also attached are two SLHA-friendly data files containing the detailed masses and branching ratios for the mSUGRA model and the GMSB model being used, if you'd like to see those gory details. The reason for the GMSB proposal is in case it is deemed desirable to include (possibly displaced) photons in the detector

study.

Best,  
Steve



[bench.pdf \(53.7 KB\)](#) [CLIC bench ...dat \(47.6 KB\)](#) [CLIC bench ...dat \(49.4 KB\)](#)