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SUSY cross sections and uncertainties for CMSSM (tanbeta=10, A0=0 and positive mu) grid used by ATLAS

A ROOT file is attached to this page with the cross sections and uncertainties for each m0 and m1/2 combination of this grid. The meaning of the variables inside the TTree is the following:

- m0 : the m0 value of this entry.
- m12 : the m1/2 value of this entry
- crossSection : The (NLL+) NLO cross-section. (NLL+NLO if available)
- Tot_error : The total (symmetric) uncertainty on the cross-section. This is a relative uncertainty.
- mass1 : mass of the first particle in the final state pair. (e.g. : for squark-gluino (sg) production, mass1 = squark-mass)
- mass2 : mass of the second particle in the final state pair. (e.g. : for squark-gluino (sg) production, mass2 = gluino-mass)
- finalState : provides the information about the production process. This information is encoded in some integers. The corresponding meaning is given at the table below:

finalState	Produced sparticle-pair	Special notes
1	squark-gluino	
2	gluino-gluino	
3	squark-squark	Includes asq-asq
4	squark-antisquark	
51	sbottom-antisbottom 1	N.B. sbottoms are already included in the squark-cross-sections*
52	sbottom-antisbottom 2	N.B. sbottoms are already included in the squark-cross-sections*
61	stop-antistop 1	
62	stop-antistop 2	
71, 72, 73, 74	chi^{0}_{1,2,3,4} - gluino	
75, 76	chi^{+}_{1, 2} - gluino	
77, 78	chi^{-}_{1, 2} -gluino	
81, 82, 83, 84	chi^{0}_{1,2,3,4} -squark	
85, 86	chi^{+}_{1, 2} - squark	
87, 88	chi^{-}_{1, 2} -squark	
201	left-handed slepton pair (first or second gen)	
202	right-handed slepton pair (first or second gen)	
203	sneutrino pair (first of second gen.)	
204	~l^{+} - sneutrino	
205	~l^{-} - sneutrino	
206	stau1 - stau1	
207	stau2 - stau2	
208	stau1 - stau2	
209	sneutrino tau - sneutrino tau	
210	stau1^{+} - sneutrino tau	
211	stau1^{-} - sneutrino tau	
212	stau2^{+} - sneutrino tau	
213	stau2^{-} - sneutrino tau	

(*) Sbottom-pair production is included in the squark-antisquark production. For models sensitive to b1b1 or b2b2, these values should be used and the squark-antisquark production cross section should be rescaled down by 4/5.

Note that there are no numbers for gaugino-gaugino interactions as they have not been considered for this particular grid. The reason is that this grid is generally used for the interpretation of strong production analyses, which have little sensitivity to these processes.

-- XavierPortell - 07-Jun-2012

- SignalUncertaintiesSmaller-MSUGRA-v1.0.root: CMSSM tanbeta=10 cross sections and uncertainties for 7 TeV (ATLAS)

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