

stau NLSP sample production

- need to generated signal MC files for stau NLSP analysis, LSP = $O(eV)$ gravitino
 - $e^+e^- \rightarrow \text{stau}^+ \text{stau}^- \rightarrow \tau^+ \tau^- \text{LSP LSP}$
- stau & tau have nonzero lifetime
 - analysis target: $c\tau = 1 \text{ um} \sim 1000 \text{ um}$
 - needs to be simulated carefully in Mokka/G4
- stau flight problem with JSF/Mokka
 - **FIXED!!** -> `JSFStdHepWriter.cxx`

Generated using JSF on jlclogn2, stdhep output, events from STUSTUStudy

(1)	IDHEP= 1000015	ISTHEP= 2	JMOHEP= 0,	0	JDAHEP= 3,	4	PHEP=(1.51e+02,	-1.62e+01,	1.58e+02,	2.50e+02)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(2)	IDHEP=-1000015	ISTHEP= 2	JMOHEP= 0,	0	JDAHEP= 5,	6	PHEP=(-1.51e+02,	1.62e+01,	-1.57e+02,	2.49e+02)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(3)	IDHEP= 1000039	ISTHEP= 2	JMOHEP= 1,	0	JDAHEP= 0,	-1	PHEP=(-1.14e+01,	-4.33e-01,	-1.03e+01,	1.55e+01)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(4)	IDHEP= 15	ISTHEP= 2	JMOHEP= 1,	0	JDAHEP= 0,	-1	PHEP=(1.62e+02,	-1.57e+01,	1.68e+02,	2.34e+02)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(5)	IDHEP= 1000039	ISTHEP= 2	JMOHEP= 2,	0	JDAHEP= 0,	-1	PHEP=(-1.51e+02,	-1.47e+00,	-8.24e+01,	1.72e+02)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(6)	IDHEP= -15	ISTHEP= 2	JMOHEP= 2,	0	JDAHEP= 0,	-1	PHEP=(4.71e-01,	1.76e+01,	-7.50e+01,	7.71e+01)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(7)	IDHEP= 1000015	ISTHEP= 13	JMOHEP= 5,	0	JDAHEP= 0,	0	PHEP=(1.52e+02,	-1.62e+01,	1.58e+02,	2.50e+02)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(8)	IDHEP=-1000015	ISTHEP= 13	JMOHEP= 4,	0	JDAHEP= 0,	0	PHEP=(-1.50e+02,	1.62e+01,	-1.57e+02,	2.49e+02)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(9)	IDHEP= 1000039	ISTHEP= 1	JMOHEP= 7,	0	JDAHEP= 0,	0	PHEP=(-1.14e+01,	-4.33e-01,	-1.03e+01,	1.54e+01)	VHEP=(3.00e-03,	-3.20e-04,	3.13e-03,	0.00e+00)
(10)	IDHEP= 15	ISTHEP= 2	JMOHEP= 7,	0	JDAHEP= 11,	12	PHEP=(1.63e+02,	-1.57e+01,	1.68e+02,	2.35e+02)	VHEP=(3.00e-03,	-3.20e-04,	3.13e-03,	0.00e+00)
(11)	IDHEP= 16	ISTHEP= 1	JMOHEP= 10,	0	JDAHEP= 0,	0	PHEP=(6.46e+01,	-6.90e+00,	6.72e+01,	9.35e+01)	VHEP=(5.78e-02,	-5.61e-03,	5.97e-02,	0.00e+00)
(12)	IDHEP= -213	ISTHEP= 2	JMOHEP= 10,	0	JDAHEP= 13,	14	PHEP=(9.85e+01,	-8.84e+00,	1.01e+02,	1.42e+02)	VHEP=(5.78e-02,	-5.61e-03,	5.97e-02,	0.00e+00)
(13)	IDHEP= -211	ISTHEP= 1	JMOHEP= 12,	0	JDAHEP= 0,	0	PHEP=(2.17e+01,	-1.78e+00,	2.26e+01,	3.14e+01)	VHEP=(5.78e-02,	-5.61e-03,	5.97e-02,	0.00e+00)
(14)	IDHEP= 111	ISTHEP= 2	JMOHEP= 12,	0	JDAHEP= 15,	16	PHEP=(7.68e+01,	-7.06e+00,	7.86e+01,	1.10e+02)	VHEP=(5.78e-02,	-5.61e-03,	5.97e-02,	0.00e+00)
(15)	IDHEP= 22	ISTHEP= 1	JMOHEP= 14,	0	JDAHEP= 0,	0	PHEP=(2.47e+00,	-2.12e-01,	2.50e+00,	3.52e+00)	VHEP=(5.87e-02,	-5.69e-03,	6.07e-02,	0.00e+00)
(16)	IDHEP= 22	ISTHEP= 1	JMOHEP= 14,	0	JDAHEP= 0,	0	PHEP=(7.43e+01,	-6.85e+00,	7.61e+01,	1.07e+02)	VHEP=(5.87e-02,	-5.69e-03,	6.07e-02,	0.00e+00)
(17)	IDHEP= 1000039	ISTHEP= 1	JMOHEP= 8,	0	JDAHEP= 0,	0	PHEP=(-1.51e+02,	-1.47e+00,	-8.24e+01,	1.72e+02)	VHEP=(-2.03e-02,	2.19e-03,	-2.13e-02,	0.00e+00)
(18)	IDHEP= -15	ISTHEP= 2	JMOHEP= 8,	0	JDAHEP= 19,	21	PHEP=(7.41e-01,	1.76e+01,	-7.50e+01,	7.71e+01)	VHEP=(-2.03e-02,	2.19e-03,	-2.13e-02,	0.00e+00)
(19)	IDHEP= -16	ISTHEP= 1	JMOHEP= 18,	0	JDAHEP= 0,	0	PHEP=(4.00e-01,	1.60e+00,	-6.32e+00,	6.54e+00)	VHEP=(-1.89e-02,	3.59e-02,	-1.65e-01,	0.00e+00)
(20)	IDHEP= -13	ISTHEP= 1	JMOHEP= 18,	0	JDAHEP= 0,	0	PHEP=(2.51e-01,	3.09e+00,	-1.52e+01,	1.55e+01)	VHEP=(-1.89e-02,	3.59e-02,	-1.65e-01,	0.00e+00)
(21)	IDHEP= 14	ISTHEP= 1	JMOHEP= 18,	0	JDAHEP= 0,	0	PHEP=(8.94e-02,	1.30e+01,	-5.35e+01,	5.50e+01)	VHEP=(-1.89e-02,	3.59e-02,	-1.65e-01,	0.00e+00)

Problems/BUGS:

1. (potential) double counting of the first particles
2. stau particle is not tracked (status=13, should be 2)
3. mother of first PYTHIA particle is not correct
4. production time VHEP(4) is incorrect (always zero), leads to zero stau flight & incorrect tau flight



FIXED!! (JSFWriteStdHep.cxx)

(1)	IDHEP= 1000015	ISTHEP= 102	JMOHEP= 0,	0	JDAHEP= 3,	4	PHEP=(1.51e+02,	-1.62e+01,	1.58e+02,	2.50e+02)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(2)	IDHEP=-1000015	ISTHEP= 102	JMOHEP= 0,	0	JDAHEP= 5,	6	PHEP=(-1.51e+02,	1.62e+01,	-1.57e+02,	2.49e+02)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(3)	IDHEP= 1000039	ISTHEP= 102	JMOHEP= 1,	0	JDAHEP= 0,	-1	PHEP=(-1.14e+01,	-4.33e-01,	-1.03e+01,	1.55e+01)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(4)	IDHEP= 15	ISTHEP= 102	JMOHEP= 1,	0	JDAHEP= 0,	-1	PHEP=(1.62e+02,	-1.57e+01,	1.68e+02,	2.34e+02)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(5)	IDHEP= 1000039	ISTHEP= 102	JMOHEP= 2,	0	JDAHEP= 0,	-1	PHEP=(-1.51e+02,	-1.47e+00,	-8.24e+01,	1.72e+02)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(6)	IDHEP= -15	ISTHEP= 102	JMOHEP= 2,	0	JDAHEP= 0,	-1	PHEP=(4.71e-01,	1.76e+01,	-7.50e+01,	7.71e+01)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(7)	IDHEP= 1000015	ISTHEP= 2	JMOHEP= 0,	0	JDAHEP= 9,	10	PHEP=(1.52e+02,	-1.62e+01,	1.58e+02,	2.50e+02)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(8)	IDHEP=-1000015	ISTHEP= 2	JMOHEP= 0,	0	JDAHEP= 17,	18	PHEP=(-1.50e+02,	1.62e+01,	-1.57e+02,	2.49e+02)	VHEP=(0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(9)	IDHEP= 1000039	ISTHEP= 1	JMOHEP= 7,	0	JDAHEP= 0,	0	PHEP=(-1.14e+01,	-4.33e-01,	-1.03e+01,	1.54e+01)	VHEP=(3.00e-03,	-3.20e-04,	3.13e-03,	4.95e-03)
(10)	IDHEP= 15	ISTHEP= 2	JMOHEP= 7,	0	JDAHEP= 11,	12	PHEP=(1.63e+02,	-1.57e+01,	1.68e+02,	2.35e+02)	VHEP=(3.00e-03,	-3.20e-04,	3.13e-03,	4.95e-03)
(11)	IDHEP= 16	ISTHEP= 1	JMOHEP= 10,	0	JDAHEP= 0,	0	PHEP=(6.46e+01,	-6.90e+00,	6.72e+01,	9.35e+01)	VHEP=(5.78e-02,	-5.61e-03,	5.97e-02,	8.39e-02)
(12)	IDHEP= -213	ISTHEP= 2	JMOHEP= 10,	0	JDAHEP= 13,	14	PHEP=(9.85e+01,	-8.84e+00,	1.01e+02,	1.42e+02)	VHEP=(5.78e-02,	-5.61e-03,	5.97e-02,	8.39e-02)
(13)	IDHEP= -211	ISTHEP= 1	JMOHEP= 12,	0	JDAHEP= 0,	0	PHEP=(2.17e+01,	-1.78e+00,	2.26e+01,	3.14e+01)	VHEP=(5.78e-02,	-5.61e-03,	5.97e-02,	8.39e-02)
(14)	IDHEP= 111	ISTHEP= 2	JMOHEP= 12,	0	JDAHEP= 15,	16	PHEP=(7.68e+01,	-7.06e+00,	7.86e+01,	1.10e+02)	VHEP=(5.78e-02,	-5.61e-03,	5.97e-02,	8.39e-02)
(15)	IDHEP= 22	ISTHEP= 1	JMOHEP= 14,	0	JDAHEP= 0,	0	PHEP=(2.47e+00,	-2.12e-01,	2.50e+00,	3.52e+00)	VHEP=(5.87e-02,	-5.69e-03,	6.07e-02,	8.52e-02)
(16)	IDHEP= 22	ISTHEP= 1	JMOHEP= 14,	0	JDAHEP= 0,	0	PHEP=(7.43e+01,	-6.85e+00,	7.61e+01,	1.07e+02)	VHEP=(5.87e-02,	-5.69e-03,	6.07e-02,	8.52e-02)
(17)	IDHEP= 1000039	ISTHEP= 1	JMOHEP= 8,	0	JDAHEP= 0,	0	PHEP=(-1.51e+02,	-1.47e+00,	-8.24e+01,	1.72e+02)	VHEP=(-2.03e-02,	2.19e-03,	-2.13e-02,	3.37e-02)
(18)	IDHEP= -15	ISTHEP= 2	JMOHEP= 8,	0	JDAHEP= 19,	21	PHEP=(7.41e-01,	1.76e+01,	-7.50e+01,	7.71e+01)	VHEP=(-2.03e-02,	2.19e-03,	-2.13e-02,	3.37e-02)
(19)	IDHEP= -16	ISTHEP= 1	JMOHEP= 18,	0	JDAHEP= 0,	0	PHEP=(4.00e-01,	1.60e+00,	-6.32e+00,	6.54e+00)	VHEP=(-1.89e-02,	3.59e-02,	-1.65e-01,	1.81e-01)
(20)	IDHEP= -13	ISTHEP= 1	JMOHEP= 18,	0	JDAHEP= 0,	0	PHEP=(2.51e-01,	3.09e+00,	-1.52e+01,	1.55e+01)	VHEP=(-1.89e-02,	3.59e-02,	-1.65e-01,	1.81e-01)
(21)	IDHEP= 14	ISTHEP= 1	JMOHEP= 18,	0	JDAHEP= 0,	0	PHEP=(8.94e-02,	1.30e+01,	-5.35e+01,	5.50e+01)	VHEP=(-1.89e-02,	3.59e-02,	-1.65e-01,	1.81e-01)

Implementation: computes production time from mother's flight time

Turn on computation by specifying new flag in jsf.conf:

JSFWriteStdHep.EventSource: 3

JSFWriteStdHep.ComputeTime: 1

Mokka/Marlin output with fixed STDHEP file:

[id]	index	PDG	px,	py,	pz	energy	lgen	[simstat]	vertex x,	y,	z	endpoint x,	y,	z	mass	charge	[parents]	- [daughters]
[00000014]	0	1000015	1.51e+02,	-1.62e+01,	1.58e+02	2.50e+02	102	[0	]	0.00e+00,	0.00e+00,	0.00e+00	0.00e+00,	0.00e+00,	0.00e+00	1.20e+02	-1.00e+03	[] - [2,3]
[00000015]	1	-1000015	-1.51e+02,	1.62e+01,	-1.57e+02	2.49e+02	102	[0	]	0.00e+00,	0.00e+00,	0.00e+00	0.00e+00,	0.00e+00,	0.00e+00	1.20e+02	-1.00e+03	[] - [4,5]
[00000016]	2	1000039	-1.14e+01,	-4.33e-01,	-1.03e+01	1.54e+01	102	[0	]	0.00e+00,	0.00e+00,	0.00e+00	0.00e+00,	0.00e+00,	0.00e+00	3.75e-09	-1.00e+03	[0] - []
[00000017]	3	15	1.62e+02,	-1.57e+01,	1.68e+02	2.34e+02	102	[0	]	0.00e+00,	0.00e+00,	0.00e+00	0.00e+00,	0.00e+00,	0.00e+00	1.78e+00	-1.00e+00	[0] - []
[00000018]	4	1000039	-1.51e+02,	-1.47e+00,	-8.24e+01	1.72e+02	102	[0	]	0.00e+00,	0.00e+00,	0.00e+00	0.00e+00,	0.00e+00,	0.00e+00	3.75e-09	-1.00e+03	[1] - []
[00000019]	5	-15	4.71e-01,	1.76e+01,	-7.50e+01	7.71e+01	102	[0	]	0.00e+00,	0.00e+00,	0.00e+00	0.00e+00,	0.00e+00,	0.00e+00	1.78e+00	1.00e+00	[1] - []
[0000001a]	6	1000015	1.52e+02,	-1.62e+01,	1.58e+02	2.50e+02	2	[0	]	0.00e+00,	0.00e+00,	0.00e+00	3.00e-03,	-3.20e-04,	3.13e-03	1.20e+02	-1.00e+03	[] - [8,9]
[0000001b]	7	-1000015	-1.50e+02,	1.62e+01,	-1.57e+02	2.49e+02	2	[0	]	0.00e+00,	0.00e+00,	0.00e+00	-2.03e-02,	2.19e-03,	-2.13e-02	1.20e+02	-1.00e+03	[] - [16,17]
[0000001c]	8	1000039	-1.14e+01,	-4.33e-01,	-1.03e+01	1.53e+01	1	[0	]	3.00e-03,	-3.20e-04,	3.13e-03	0.00e+00,	0.00e+00,	0.00e+00	3.75e-09	-1.00e+03	[6] - []
[0000001d]	9	15	1.63e+02,	-1.57e+01,	1.68e+02	2.35e+02	2	[t	]	0.00e+00,	0.00e+00,	0.00e+00	5.48e-02,	-5.29e-03,	5.66e-02	1.78e+00	-1.00e+00	[6] - [10,11]
[0000001e]	10	16	6.46e+01,	-6.90e+00,	6.72e+01	9.35e+01	1	[v l	]	5.48e-02,	-5.29e-03,	5.66e-02	7.50e+03,	-8.01e+02,	7.81e+03	1.00e-02	0.00e+00	[9] - []
[0000001f]	11	-213	9.85e+01,	-8.84e+00,	1.01e+02	1.41e+02	2	[vt	]	5.48e-02,	-5.29e-03,	5.66e-02	5.48e-02,	-5.29e-03,	5.66e-02	7.36e-01	-1.00e+00	[9] - [12,13]
[00000020]	12	-211	2.17e+01,	-1.78e+00,	2.26e+01	3.14e+01	1	[v c s	]	5.48e-02,	-5.29e-03,	5.66e-02	1.84e+03,	-6.81e+01,	1.92e+03	1.40e-01	-1.00e+00	[11] - []
[00000021]	13	111	7.68e+01,	-7.06e+00,	7.86e+01	1.10e+02	2	[vt	]	5.48e-02,	-5.29e-03,	5.66e-02	5.57e-02,	-5.37e-03,	5.75e-02	1.35e-01	0.00e+00	[11] - [14,15]
[00000022]	14	22	2.47e+00,	-2.12e-01,	2.50e+00	3.52e+00	1	[v c s	]	5.57e-02,	-5.37e-03,	5.75e-02	1.86e+03,	-1.60e+02,	1.89e+03	0.00e+00	0.00e+00	[13] - []
[00000023]	15	22	7.43e+01,	-6.85e+00,	7.61e+01	1.07e+02	1	[v c s	]	5.57e-02,	-5.37e-03,	5.75e-02	1.85e+03,	-1.70e+02,	1.89e+03	0.00e+00	0.00e+00	[13] - []
[00000024]	16	1000039	-1.51e+02,	-1.47e+00,	-8.24e+01	1.72e+02	1	[0	]	-2.03e-02,	2.19e-03,	-2.13e-02	0.00e+00,	0.00e+00,	0.00e+00	3.75e-09	-1.00e+03	[7] - []
[00000025]	17	-15	7.41e-01,	1.76e+01,	-7.51e+01	7.71e+01	2	[t	]	0.00e+00,	0.00e+00,	0.00e+00	1.41e-03,	3.37e-02,	-1.43e-01	1.78e+00	1.00e+00	[7] - [18,19,20]
[00000026]	18	-16	4.01e-01,	1.60e+00,	-6.33e+00	6.55e+00	1	[v l	]	1.41e-03,	3.37e-02,	-1.43e-01	8.86e+02,	3.54e+03,	-1.40e+04	1.00e-02	0.00e+00	[17] - []
[00000027]	19	-13	2.51e-01,	3.09e+00,	-1.52e+01	1.55e+01	1	[v l	]	1.41e-03,	3.37e-02,	-1.43e-01	6.85e+02,	2.54e+03,	-1.40e+04	1.06e-01	1.00e+00	[17] - []
[00000028]	20	14	8.94e-02,	1.30e+01,	-5.35e+01	5.50e+01	1	[v l	]	1.41e-03,	3.37e-02,	-1.43e-01	2.34e+01,	3.39e+03,	-1.40e+04	0.00e+00	0.00e+00	[17] - []

stau & tau now fly correctly as specified in the STDHEP file!

TTH 1 TeV Benchmark Sample (p106001_01.stdhep, first event)

(1) IDHEP=	22	ISTHEP=	3	JMOHEP=	0,	0	JDAHEP=	0,	0	PHEP=(	8.97e-05,	-5.22e-05,	2.14e-04,	2.38e-04)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(2) IDHEP=	22	ISTHEP=	3	JMOHEP=	0,	0	JDAHEP=	0,	0	PHEP=(	-0.00e+00,	0.00e+00,	-0.00e+00,	0.00e+00)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(3) IDHEP=	-6	ISTHEP=	3	JMOHEP=	1,	2	JDAHEP=	6,	7	PHEP=(	-1.49e+02,	-7.70e+01,	-3.72e+02,	4.43e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(4) IDHEP=	6	ISTHEP=	3	JMOHEP=	1,	2	JDAHEP=	8,	9	PHEP=(	3.93e+01,	-7.36e+00,	2.93e+02,	3.57e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(5) IDHEP=	25	ISTHEP=	3	JMOHEP=	1,	2	JDAHEP=	0,	0	PHEP=(	1.09e+02,	8.43e+01,	7.96e+01,	2.00e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(6) IDHEP=	-5	ISTHEP=	3	JMOHEP=	3,	0	JDAHEP=	0,	0	PHEP=(	-1.27e+02,	-1.08e+01,	-2.60e+02,	2.89e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(7) IDHEP=	-24	ISTHEP=	3	JMOHEP=	3,	0	JDAHEP=	10,	11	PHEP=(	-2.16e+01,	-6.62e+01,	-1.12e+02,	1.54e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(8) IDHEP=	5	ISTHEP=	3	JMOHEP=	4,	0	JDAHEP=	0,	0	PHEP=(	-2.43e+00,	-8.25e+01,	7.33e+01,	1.10e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(9) IDHEP=	24	ISTHEP=	3	JMOHEP=	4,	0	JDAHEP=	12,	13	PHEP=(	4.17e+01,	7.51e+01,	2.19e+02,	2.47e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(10) IDHEP=	-12	ISTHEP=	3	JMOHEP=	7,	0	JDAHEP=	0,	0	PHEP=(	-4.71e+01,	-6.13e+01,	-6.90e+01,	1.04e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(11) IDHEP=	11	ISTHEP=	3	JMOHEP=	7,	0	JDAHEP=	0,	0	PHEP=(	2.55e+01,	-4.95e+00,	-4.32e+01,	5.04e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(12) IDHEP=	2	ISTHEP=	3	JMOHEP=	9,	0	JDAHEP=	0,	0	PHEP=(	6.21e+01,	5.48e+01,	1.39e+02,	1.62e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(13) IDHEP=	-1	ISTHEP=	3	JMOHEP=	9,	0	JDAHEP=	0,	0	PHEP=(	-2.03e+01,	2.03e+01,	7.97e+01,	8.48e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(14) IDHEP=	22	ISTHEP=	1	JMOHEP=	0,	0	JDAHEP=	0,	0	PHEP=(	8.97e-05,	-5.22e-05,	2.14e-04,	2.38e-04)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(15) IDHEP=	22	ISTHEP=	1	JMOHEP=	0,	0	JDAHEP=	0,	0	PHEP=(	-0.00e+00,	0.00e+00,	-0.00e+00,	0.00e+00)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(16) IDHEP=	5	ISTHEP=	2	JMOHEP=	0,	0	JDAHEP=	0,	0	PHEP=(	-2.43e+00,	-8.25e+01,	7.33e+01,	1.10e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(17) IDHEP=	-5	ISTHEP=	2	JMOHEP=	0,	0	JDAHEP=	0,	0	PHEP=(	-1.27e+02,	-1.08e+01,	-2.60e+02,	2.89e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(18) IDHEP=	2	ISTHEP=	2	JMOHEP=	0,	0	JDAHEP=	0,	0	PHEP=(	6.21e+01,	5.48e+01,	1.39e+02,	1.62e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(19) IDHEP=	-1	ISTHEP=	2	JMOHEP=	0,	0	JDAHEP=	0,	0	PHEP=(	-2.03e+01,	2.03e+01,	7.97e+01,	8.48e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(20) IDHEP=	11	ISTHEP=	2	JMOHEP=	0,	0	JDAHEP=	0,	0	PHEP=(	2.55e+01,	-4.95e+00,	-4.32e+01,	5.04e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(21) IDHEP=	-12	ISTHEP=	2	JMOHEP=	0,	0	JDAHEP=	0,	0	PHEP=(	-4.71e+01,	-6.13e+01,	-6.90e+01,	1.04e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(22) IDHEP=	25	ISTHEP=	2	JMOHEP=	0,	0	JDAHEP=	91,	92	PHEP=(	1.09e+02,	8.43e+01,	7.96e+01,	2.00e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(23) IDHEP=	6	ISTHEP=	2	JMOHEP=	0,	0	JDAHEP=	25,	25	PHEP=(	3.93e+01,	-7.36e+00,	2.93e+02,	3.57e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(24) IDHEP=	-6	ISTHEP=	2	JMOHEP=	0,	0	JDAHEP=	25,	25	PHEP=(	-1.49e+02,	-7.70e+01,	-3.72e+02,	4.43e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(25) IDHEP=	94	ISTHEP=	2	JMOHEP=	23,	24	JDAHEP=	26,	27	PHEP=(	-1.09e+02,	-8.43e+01,	-7.93e+01,	8.01e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(26) IDHEP=	6	ISTHEP=	2	JMOHEP=	25,	0	JDAHEP=	42,	42	PHEP=(	3.34e+01,	-7.80e+00,	2.60e+02,	3.30e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(27) IDHEP=	-6	ISTHEP=	2	JMOHEP=	25,	0	JDAHEP=	28,	29	PHEP=(	-1.43e+02,	-7.65e+01,	-3.39e+02,	4.70e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(28) IDHEP=	-6	ISTHEP=	2	JMOHEP=	27,	0	JDAHEP=	53,	53	PHEP=(	-1.23e+02,	-1.23e+02,	-3.13e+02,	3.98e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(29) IDHEP=	21	ISTHEP=	2	JMOHEP=	27,	0	JDAHEP=	30,	31	PHEP=(	-1.99e+01,	4.63e+01,	-2.56e+01,	7.22e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(30) IDHEP=	21	ISTHEP=	2	JMOHEP=	29,	0	JDAHEP=	32,	33	PHEP=(	1.22e+01,	2.45e+01,	-1.07e+01,	3.03e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(31) IDHEP=	21	ISTHEP=	2	JMOHEP=	29,	0	JDAHEP=	34,	35	PHEP=(	-3.21e+01,	2.18e+01,	-1.49e+01,	4.19e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(32) IDHEP=	21	ISTHEP=	2	JMOHEP=	30,	0	JDAHEP=	78,	78	PHEP=(	-1.36e-01,	4.35e-01,	-6.72e-01,	8.12e-01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(33) IDHEP=	21	ISTHEP=	2	JMOHEP=	30,	0	JDAHEP=	36,	37	PHEP=(	1.23e+01,	2.40e+01,	-1.00e+01,	2.95e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(34) IDHEP=	21	ISTHEP=	2	JMOHEP=	31,	0	JDAHEP=	76,	76	PHEP=(	-2.85e+01,	1.87e+01,	-1.46e+01,	3.71e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(35) IDHEP=	21	ISTHEP=	2	JMOHEP=	31,	0	JDAHEP=	77,	77	PHEP=(	-3.64e+00,	3.12e+00,	-2.88e-01,	4.80e+00)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(36) IDHEP=	21	ISTHEP=	2	JMOHEP=	33,	0	JDAHEP=	38,	39	PHEP=(	1.18e+01,	2.26e+01,	-1.05e+01,	2.79e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(37) IDHEP=	21	ISTHEP=	2	JMOHEP=	33,	0	JDAHEP=	82,	82	PHEP=(	5.33e-01,	1.48e+00,	4.62e-01,	1.64e+00)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(38) IDHEP=	21	ISTHEP=	2	JMOHEP=	36,	0	JDAHEP=	79,	79	PHEP=(	2.91e+00,	2.90e+00,	-1.75e+00,	4.46e+00)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(39) IDHEP=	21	ISTHEP=	2	JMOHEP=	36,	0	JDAHEP=	40,	41	PHEP=(	8.87e+00,	1.97e+01,	-8.71e+00,	2.34e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(40) IDHEP=	21	ISTHEP=	2	JMOHEP=	39,	0	JDAHEP=	81,	81	PHEP=(	2.41e+00,	3.43e+00,	-2.34e+00,	4.80e+00)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(41) IDHEP=	21	ISTHEP=	2	JMOHEP=	39,	0	JDAHEP=	80,	80	PHEP=(	6.46e+00,	1.62e+01,	-6.37e+00,	1.86e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(42) IDHEP=	5	ISTHEP=	2	JMOHEP=	26,	0	JDAHEP=	44,	44	PHEP=(	-4.29e+00,	-8.27e+01,	6.33e-01,	1.04e+02)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)
(208) IDHEP=	-521	ISTHEP=	2	JMOHEP=140,	0	0	JDAHEP=277,280	PHEP=(	-2.35e+00,	-5.71e+01,	4.37e+01,	7.22e+01)	VHEP=(	0.00e+00,	0.00e+00,	0.00e+00,	0.00e+00)		
(277) IDHEP=	10421	ISTHEP=	2	JMOHEP=208,	0	0	JDAHEP=304,305	PHEP=(	-1.97e+00,	-3.27e+01,	2.53e+01,	4.14e+01)	VHEP=(	-4.69e-02,	-1.14e+00,	8.73e-01,	0.00e+00)		
(280) IDHEP=	-211	ISTHEP=	1	JMOHEP=208,	0	0	JDAHEP= 0,	0	PHEP=(	3.31e-01,	-4.34e+00,	3.35e+00,	5.50e+00)	VHEP=(	-4.69e-02,	-1.14e+00,	8.73e-01,	0.00e+00)	

Production time is not available -> Mokka will not fly b/c hadrons!