

BP-1

masses

| | PDG Code | Mass | Particle Name |
|----|----------|-------------|-------------------------|
| 0 | 5 | 4.180000 | MB(MB) |
| 1 | 6 | 173.400000 | MTOP (POLE MASS) |
| 2 | 15 | 1.777000 | MTAU |
| 3 | 23 | 91.187000 | MZ |
| 4 | 24 | 80.354500 | MW |
| 5 | 35 | 97.447890 | lightest neutral scalar |
| 6 | 25 | 124.592723 | second neutral scalar |
| 7 | 45 | 679.708376 | third neutral scalar |
| 8 | 36 | 3.525478 | lightest pseudoscalar |
| 9 | 46 | 678.152290 | second pseudoscalar |
| 10 | 37 | 679.933432 | charged Higgs |
| 11 | 1000001 | 1010.138930 | ~d_L |
| 12 | 2000001 | 1008.822290 | ~d_R |
| 13 | 1000002 | 1007.204750 | ~u_L |
| 14 | 2000002 | 1007.925950 | ~u_R |
| 15 | 1000003 | 1010.138930 | ~s_L |
| 16 | 2000003 | 1008.822290 | ~s_R |
| 17 | 1000004 | 1007.204750 | ~c_L |
| 18 | 2000004 | 1007.925950 | ~c_R |
| 19 | 1000005 | 1006.463330 | ~b_1 |
| 20 | 2000005 | 991.138095 | ~b_2 |
| 21 | 1000006 | 842.428918 | ~t_1 |
| 22 | 2000006 | 1111.722950 | ~t_2 |
| 23 | 1000011 | 303.243448 | ~e_L |
| 24 | 2000011 | 302.853828 | ~e_R |
| 25 | 1000012 | 293.807710 | ~nue_L |
| 26 | 1000013 | 303.243448 | ~mu_L |
| 27 | 2000013 | 302.853828 | ~mu_R |
| 28 | 1000014 | 293.807710 | ~numu_L |
| 29 | 1000015 | 296.489208 | ~tau_1 |
| 30 | 2000015 | 309.479393 | ~tau_2 |
| 31 | 1000016 | 293.807710 | ~nutau_L |
| 32 | 1000021 | 1922.608010 | ~g |
| 33 | 1000022 | 86.983154 | neutralino(1) |
| 34 | 1000023 | -136.141792 | neutralino(2) |
| 35 | 1000025 | 143.246641 | neutralino(3) |
| 36 | 1000035 | 554.120379 | neutralino(4) |
| 37 | 1000045 | 1192.370220 | neutralino(5) |
| 38 | 1000024 | 124.000773 | chargino(1) |
| 39 | 1000037 | 1192.366300 | chargino(2) |

Higgs Mixing

(CP Even) Neutral

$$\begin{pmatrix} S_{11} & S_{12} & S_{13} \\ S_{21} & S_{22} & S_{23} \\ S_{31} & S_{32} & S_{33} \end{pmatrix} * \begin{pmatrix} H_d^0 \\ H_u^0 \\ S \end{pmatrix} = \begin{pmatrix} h_1^0 \\ h_2^0 \\ h_3^0 \end{pmatrix}$$

| | H_d_0 | H_u_0 | S |
|-------|-----------|-----------|-----------|
| h_1_0 | 2.454957 | 16.719363 | 80.825680 |
| h_2_0 | 2.316358 | 79.104115 | 18.579527 |
| h_3_0 | 95.228685 | 4.176522 | 0.594793 |

(CP Odd) Neutral

$$\begin{pmatrix} P_{11} & P_{12} & P_{13} \\ P_{21} & P_{22} & P_{23} \end{pmatrix} * \begin{pmatrix} H_d^0 \\ H_u^0 \\ S \end{pmatrix} = \begin{pmatrix} a_1^0 \\ a_2^0 \end{pmatrix}$$

| | H_d_0 | H_u_0 | S |
|-------|-----------|----------|-----------|
| a_1_0 | 0.345660 | 0.013826 | 99.640693 |
| a_2_0 | 95.808174 | 3.832327 | 0.359306 |

Neutralino Mixing

$$\begin{pmatrix} P_{11} & P_{12} & P_{13} & P_{14} & P_{15} \\ P_{21} & P_{22} & P_{23} & P_{24} & P_{25} \\ P_{31} & P_{32} & P_{33} & P_{34} & P_{35} \\ P_{41} & P_{42} & P_{43} & P_{44} & P_{45} \\ P_{51} & P_{52} & P_{53} & P_{54} & P_{55} \end{pmatrix} * \begin{pmatrix} \lambda_1^0 \\ \lambda_{23}^0 \\ \phi_d^0 \\ \phi_u^0 \\ \phi_S \end{pmatrix} = \begin{pmatrix} \chi_1^0 \\ \chi_2^0 \\ \chi_3^0 \\ \chi_4^0 \\ \chi_5^0 \end{pmatrix}$$

| | lambda_1 | lambda_2_3 | psi_d | psi_u | psi_S |
|---------|-----------|------------|-----------|-----------|-----------|
| Chi_1_0 | 0.320680 | 0.197841 | 13.328004 | 30.003066 | 56.150409 |
| Chi_2_0 | 0.115830 | 0.108399 | 48.913186 | 47.970174 | 2.892412 |
| Chi_3_0 | 0.362250 | 0.191615 | 37.602506 | 20.886812 | 40.956817 |
| Chi_4_0 | 99.198971 | 0.012254 | 0.114357 | 0.674065 | 0.000353 |
| Chi_5_0 | 0.002269 | 99.489891 | 0.041947 | 0.465883 | 0.000009 |

Chargino Mixing

U-Mix (-ve)

$$\begin{pmatrix} P_{11} & P_{12} \\ P_{21} & P_{22} \end{pmatrix} * \begin{pmatrix} \lambda^- \\ \phi_d^- \end{pmatrix} = \begin{pmatrix} \chi_1^- \\ \chi_2^- \end{pmatrix}$$

| | lambda(-) | psi_d(-) |
|----------|-----------|----------|
| Chi_1(-) | 0.08326 | 99.91674 |
| Chi_2(-) | 99.91674 | 0.08326 |

V-Mix (+ve)

$$\begin{pmatrix} P_{11} & P_{12} \\ P_{21} & P_{22} \end{pmatrix} * \begin{pmatrix} \lambda^+ \\ \phi_u^+ \end{pmatrix} = \begin{pmatrix} \chi_1^+ \\ \chi_2^+ \end{pmatrix}$$

| | lambda(+) | psi_u(+) |
|----------|-----------|-----------|
| Chi_1(+) | 0.930861 | 99.069139 |
| Chi_2(+) | 99.069139 | 0.930861 |

BP-2

masses

| | PDG Code | Mass | Particle Name |
|----|----------|-------------|-------------------------|
| 0 | 5 | 4.180000 | MB(MB) |
| 1 | 6 | 173.400000 | MTOP (POLE MASS) |
| 2 | 15 | 1.777000 | MTAU |
| 3 | 23 | 91.187000 | MZ |
| 4 | 24 | 80.354500 | MW |
| 5 | 35 | 62.140358 | lightest neutral scalar |
| 6 | 25 | 124.559689 | second neutral scalar |
| 7 | 45 | 738.895574 | third neutral scalar |
| 8 | 36 | 7.478705 | lightest pseudoscalar |
| 9 | 46 | 737.871904 | second pseudoscalar |
| 10 | 37 | 738.953037 | charged Higgs |
| 11 | 1000001 | 1041.414760 | ~d_L |
| 12 | 2000001 | 1040.161150 | ~d_R |
| 13 | 1000002 | 1038.622700 | ~u_L |
| 14 | 2000002 | 1039.312320 | ~u_R |
| 15 | 1000003 | 1041.414760 | ~s_L |
| 16 | 2000003 | 1040.161150 | ~s_R |
| 17 | 1000004 | 1038.622700 | ~c_L |
| 18 | 2000004 | 1039.312320 | ~c_R |
| 19 | 1000005 | 1038.531600 | ~b_1 |
| 20 | 2000005 | 1028.827870 | ~b_2 |
| 21 | 1000006 | 936.279240 | ~t_1 |
| 22 | 2000006 | 1112.247690 | ~t_2 |
| 23 | 1000011 | 303.246385 | ~e_L |
| 24 | 2000011 | 302.836851 | ~e_R |
| 25 | 1000012 | 293.822177 | ~nue_L |
| 26 | 1000013 | 303.246385 | ~mu_L |
| 27 | 2000013 | 302.836851 | ~mu_R |
| 28 | 1000014 | 293.822177 | ~numu_L |
| 29 | 1000015 | 296.479264 | ~tau_1 |
| 30 | 2000015 | 309.475185 | ~tau_2 |
| 31 | 1000016 | 293.822177 | ~nutau_L |
| 32 | 1000021 | 1387.026890 | ~g |
| 33 | 1000022 | 63.607146 | neutralino(1) |
| 34 | 1000023 | 124.812278 | neutralino(2) |
| 35 | 1000025 | -139.030539 | neutralino(3) |
| 36 | 1000035 | 246.936283 | neutralino(4) |
| 37 | 1000045 | 522.350880 | neutralino(5) |
| 38 | 1000024 | 118.127645 | chargino(1) |
| 39 | 1000037 | 522.279633 | chargino(2) |

Higgs Mixing

(CP Even) Neutral

| | H_d_0 | H_u_0 | S |
|-------|-----------|-----------|-----------|
| h_1_0 | 2.290484 | 15.868900 | 81.840615 |
| h_2_0 | 2.352371 | 80.040322 | 17.607307 |
| h_3_0 | 95.357145 | 4.090777 | 0.552078 |

(CP Odd) Neutral

| | H_d_0 | H_u_0 | S |
|-------|-----------|----------|-----------|
| a_1_0 | 0.425614 | 0.017025 | 99.557536 |
| a_2_0 | 95.728511 | 3.829140 | 0.442463 |

Neutralino Mixing

| | lambda_1 | lambda_2_3 | psi_d | psi_u | psi_S |
|---------|-----------|------------|-----------|-----------|-----------|
| Chi_1_0 | 1.701236 | 0.893546 | 7.807837 | 22.751104 | 66.846277 |
| Chi_2_0 | 5.071716 | 1.493432 | 42.428411 | 21.501150 | 29.505291 |
| Chi_3_0 | 0.395048 | 0.462209 | 47.205044 | 48.372153 | 3.565547 |
| Chi_4_0 | 92.759868 | 0.536164 | 2.054436 | 4.568319 | 0.081212 |
| Chi_5_0 | 0.072132 | 96.614649 | 0.504272 | 2.807275 | 0.001672 |

Chargino Mixing

U-Mix (-ve)

| | lambda(-) | psi_d(-) |
|----------|-----------|-----------|
| Chi_1(-) | 0.972588 | 99.027412 |
| Chi_2(-) | 99.027412 | 0.972588 |

V-Mix (+ve)

| | lambda(+) | psi_u(+) |
|----------|-----------|----------|
| Chi_1(+) | 5.5782 | 94.4218 |
| Chi_2(+) | 94.4218 | 5.5782 |