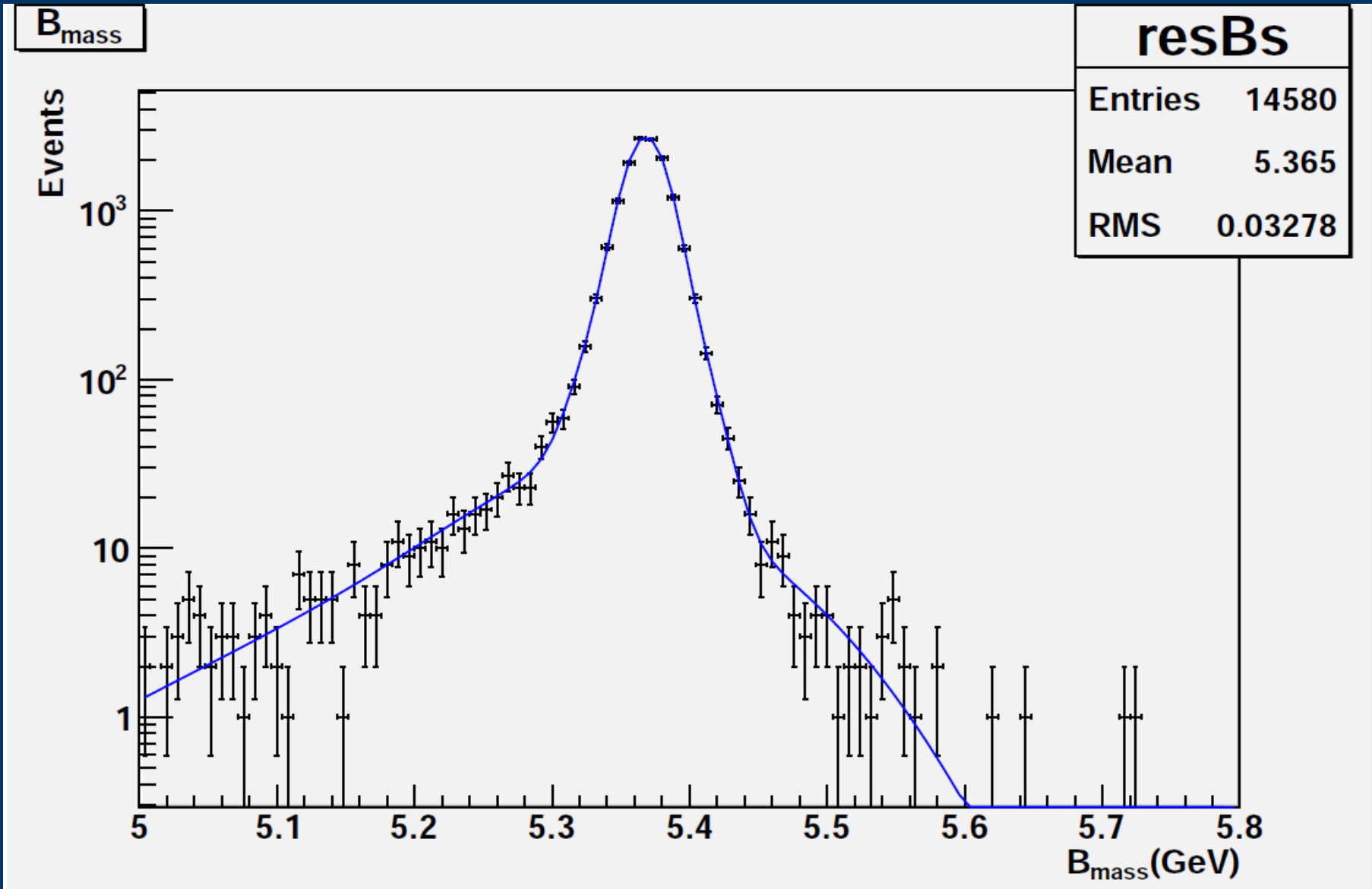


# Mass Lineshape Plots

Celestino Rodríguez Cobo

# Mass Lineshape



# Mass Lineshape

FCN=44.6218 FROM MINOS    STATUS=PROBLEMS    11946 CALLS    17717 TOTAL  
 EDM=1.4192e-05    STRATEGY= 1    ERROR MATRIX ACCURATE

| EXT PARAMETER |      | PARABOLIC    | MINOS ERRORS |              |             |
|---------------|------|--------------|--------------|--------------|-------------|
| NO.           | NAME | VALUE        | ERROR        | NEGATIVE     | POSITIVE    |
| 1             | fr2  | 7.95609e-01  | 1.76780e-01  |              |             |
| 2             | frac | 1.98995e-01  | 1.73400e-01  |              |             |
| 3             | mabs | 5.36843e+00  | 1.62420e-04  | -1.61814e-04 | 1.62004e-04 |
| 4             | pm   | -1.04356e+00 | 1.55301e+00  | -1.02353e+00 | 2.26084e+00 |
| 5             | sal  | 7.97407e+00  | 2.64527e+00  |              | 2.57610e+00 |
| 6             | sig  | 2.52850e-02  | 6.17781e-03  |              | 2.44031e-03 |
| 7             | sig2 | 1.39315e-02  | 1.64141e-03  | -7.12987e-04 | 5.83349e-04 |
| 8             | sig3 | 8.61693e-02  | 2.51749e-02  | -1.37026e-02 | 1.79639e-02 |
| 9             | weig | 6.95152e-03  | 1.57632e-03  | -1.51857e-03 | 1.66319e-03 |

# Mass Lineshape

$$L(\text{mass}, mb, s, \sigma_1, \sigma_2, \sigma_3, fl, fl2, pm, w) = (1 + pm|m - mb|)(wA + (1 - w)B)$$

$$A = f(\text{mass}, mb, s) \otimes \text{Res}(\text{mass}, 0, \sigma_1, \sigma_2, \sigma_3, fl, fl2)$$

$$B = \text{Res}(\text{mass}, mb, \sigma_1, \sigma_2, \sigma_3, fl, fl2)$$

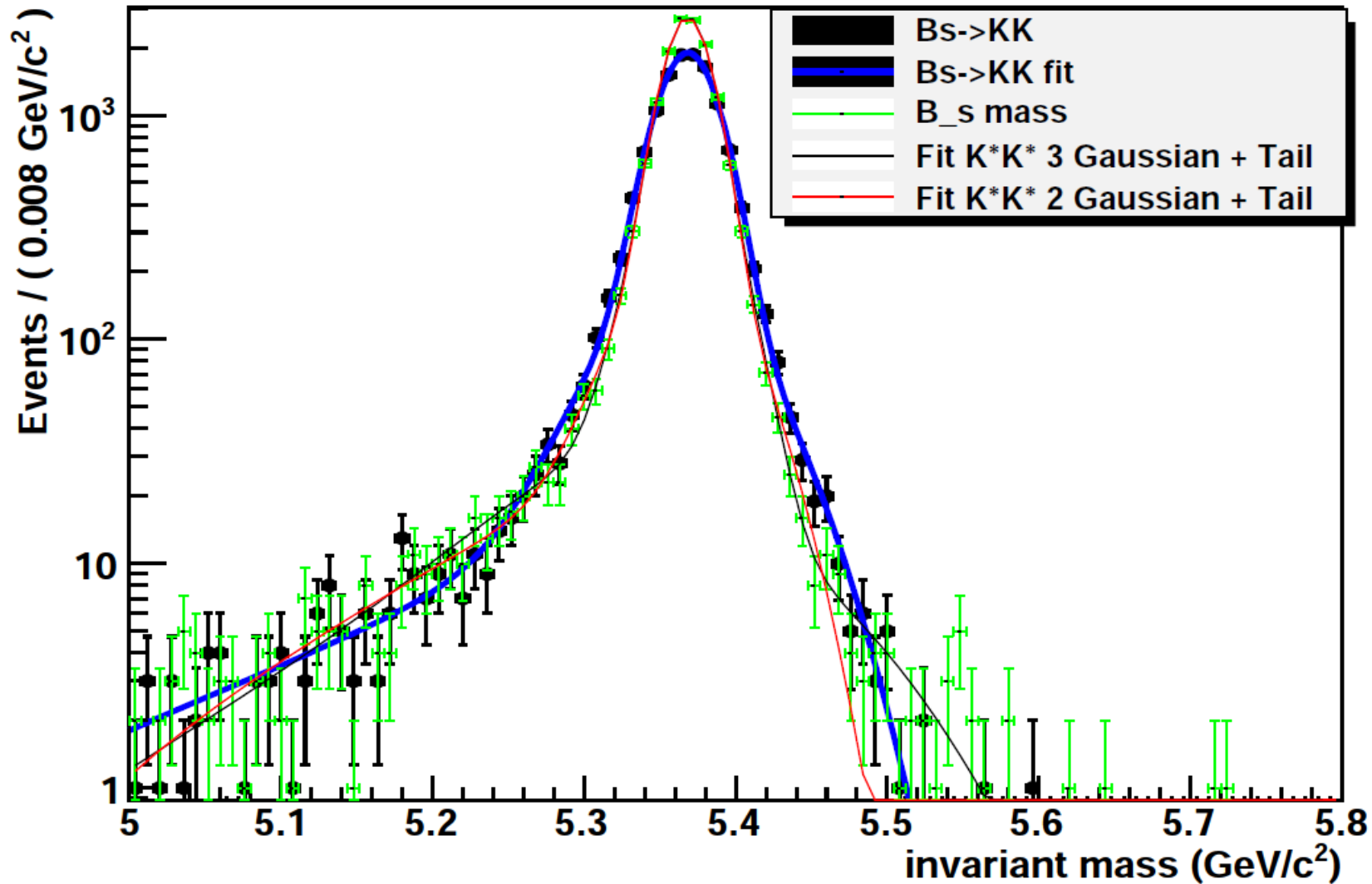
$$\text{Res}(\text{mass}, mb, \sigma_1, \sigma_2, \sigma_3, fl, fl2) = fl * \exp(-0.5 * (\frac{\text{mass} - mb}{\sigma_1})^2)$$

$$+ fl2 * \exp(-0.5 * (\frac{\text{mass} - mb}{\sigma_2})^2) + (1 - fl - fl2) * \exp(-0.5 * (\frac{\text{mass} - mb}{\sigma_3})^2)$$

$$f(\text{mass}, mb, s) = \text{Exp}(s(\text{mass} - mb)) \cdot \Theta_H(mb - \text{mass})$$

- Three effects are modelled
- Resolution (3 Gaussians)
- Impact parameter acceptance effect( slope)
- Radiative tail (exponential)
- Fair agreement

# Mass Lineshape



# Mass Lineshape

