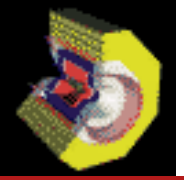

Cornell University
Laboratory for
Elementary-Particle Physics

$D_S^{*+} \to D_S^+ e^+ e^-$

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Contents

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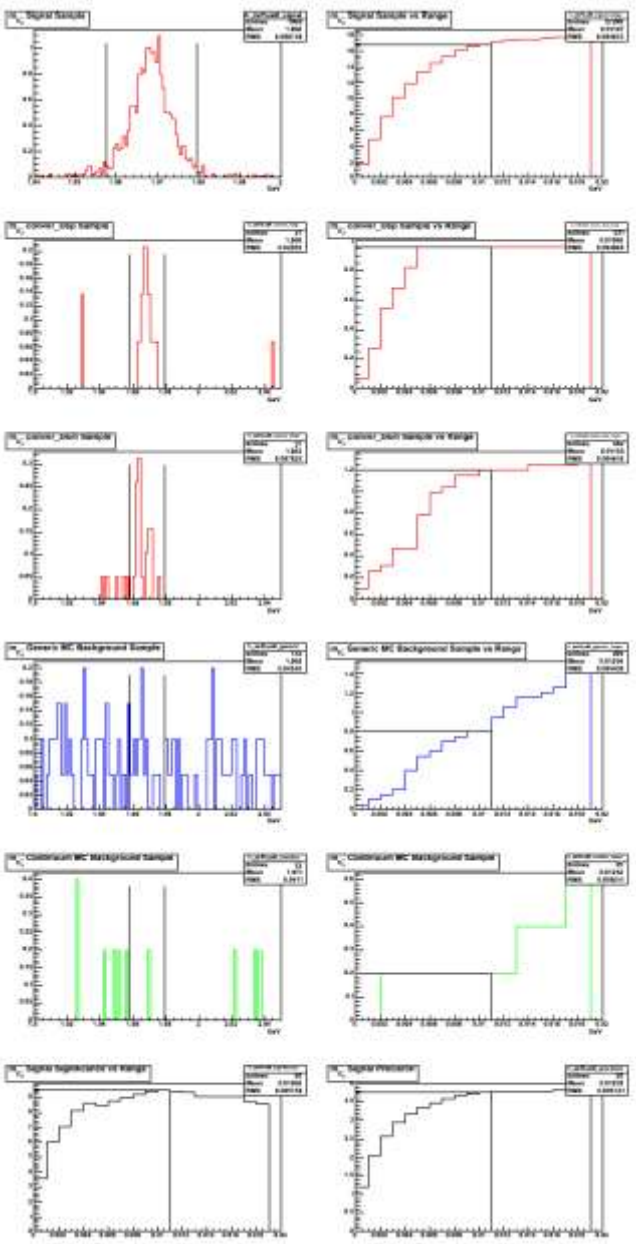
Prediction for Data for Sample Set of Cuts

Decay Mode of the D_S^+	Expected Signal Events in 586 pb^{-1} in the *Pion-Fitted* Samples	Expected Background Events in 586 pb^{-1} in *the Pion-Fitted* Samples	Expected Signal Events in 586 pb^{-1} in the *Electron-Fitted* Samples	Expected Background Events in 586 pb^{-1} in the *Electron-Fitted* Samples	Details in Link
$K^+K^-\pi^+$	12.3	2.0	14.1	1.1	KKpi
K_sK^+	3.3	0.8	3.2	0.5	KsK
$\pi^+\eta;\ \eta\to\gamma\gamma$	4.2	0.4	4.8	0.5	pieta
$\pi^+\acute{\eta};\ \acute{\eta}\to\pi^+\pi^-\eta;$ $\eta\to\gamma\gamma$	1.1	0.5	1.2	0.0	pietaprime
$K^+K^-\pi^+\pi^0$	4.9	3.8	5.1	2.2	KKpipi0
$\pi^+\pi^-\pi^+$	3.2	1.3	3.9	2.1	pipipi
$K^{*+}K^{*0};$ $K^{*+}\to K^0_S\pi^+;$ $K^{*0}\to K^-\pi^+$	1.9	1.3	2.1	1.0	KsKmpipi
$\eta\rho^+;\ \eta\to\gamma\gamma;$ $\rho^+\to\pi^+\pi^0$	5.8	5.9	6.0	2.5	pipi0eta
$\acute{\eta}\pi^+;\ \acute{\eta}\to\rho^0\gamma$	2.3	2.4	2.5	2.3	pietaprimerho
Total	**39.0**	**18.4**	**42.9**	**12.2**	

$$9.1\sigma \to 12.3\sigma$$

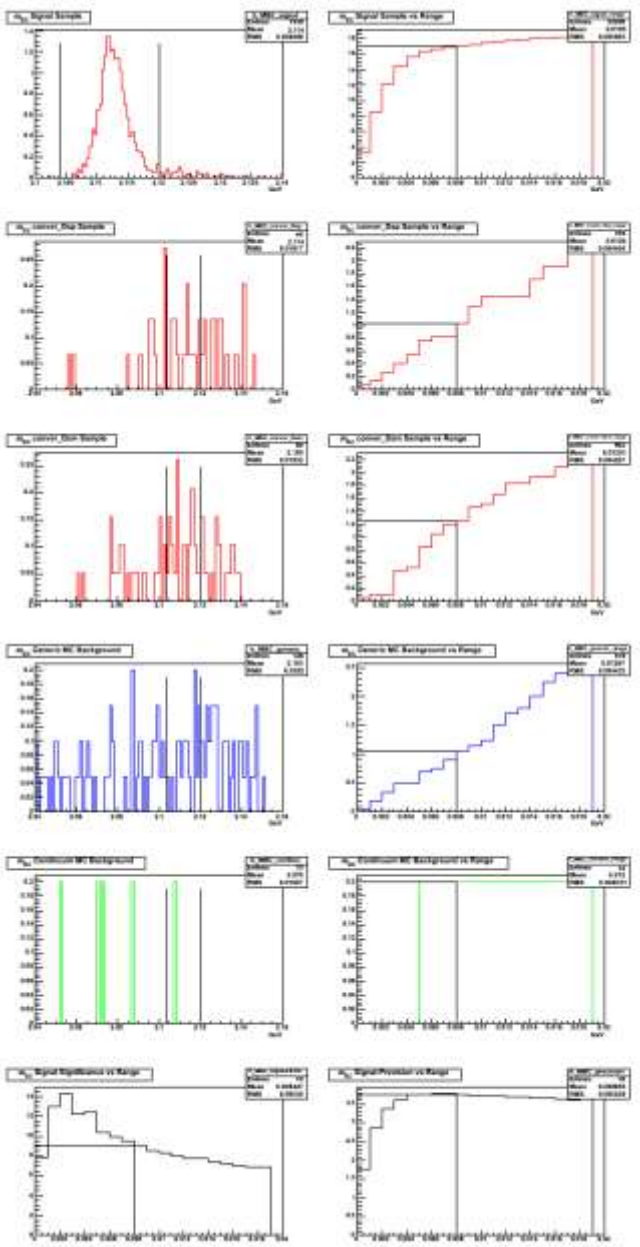
Un-blinding Strategy

- m_{Ds}
  - Signal: peaks
  - Conversion background: peaks
  - Generic-conversion background: linear
  - Continuum background: linear



Un-blinding Strategy

- m_{BC}
  - Signal: peaks
  - Conversions: peaks
  - Generic-conversions: linear
  - Continuum: linear



Un-blinding Strategy

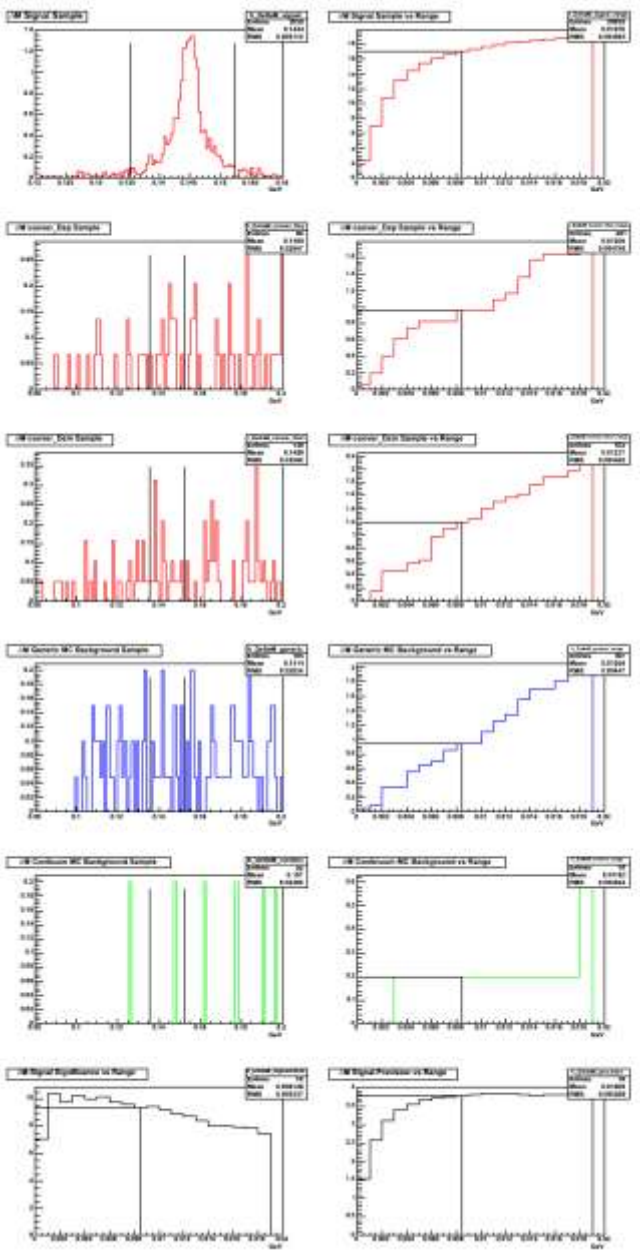
- δm
  - Signal: peaks
  - Conversions: linear
  - Generic-conversions: linear
  - Continuum: linear

  <u>Most useful kinematic variable to estimate backgrounds!</u>

  We are going to estimate backgrounds by using a linear fit in the sideband regions and extrapolating how much we expect in the signal region.

  This will be double checked by using the shape information of the mBC and m_Ds and dPhi variables.

  Then we can proceed to unblinding.



Un-blinding Strategy

- $\Delta\varphi$
  - Signal: peaks
  - Conversions: peaks
  - Generic-conversions: peaks
  - Continuum: peaks