

$$\left\{ \begin{array}{l}
\sigma_{pp} = Z_{pp} + B_{pp} \ln s + Y_1^{pp} s^{-\eta_1} - 5 \cdot Y_2^{\pi p} s^{-\eta_2}, \\
\sigma_{\bar{p}p} = Z_{pp} + B_{pp} \ln s + Y_1^{pp} s^{-\eta_1} + 5 \cdot Y_2^{\pi p} s^{-\eta_2}, \\
\sigma_{\pi^+p} = Z_{\pi p} + B_{\pi p} \ln s + Y_1^{\pi p} s^{-\eta_1} - Y_2^{\pi p} s^{-\eta_2}, \\
\sigma_{\pi^-p} = Z_{\pi p} + B_{\pi p} \ln s + Y_1^{\pi p} s^{-\eta_1} + Y_2^{\pi p} s^{-\eta_2}, \\
\sigma_{K^+p} = Z_{Kp} + B_{Kp} \ln s + Y_1^{Kp} s^{-\eta_1} - 2 \cdot Y_2^{\pi p} s^{-\eta_2}, \\
\sigma_{K^-p} = Z_{Kp} + B_{Kp} \ln s + Y_1^{Kp} s^{-\eta_1} + 2 \cdot Y_2^{\pi p} s^{-\eta_2}, \\
\sigma_{\gamma p} = \delta (Z_{pp} + B_{pp} \ln s) + Y_1^{\gamma p} s^{-\eta_1}, \\
\sigma_{\gamma\gamma} = \delta^2 (Z_{pp} + B_{pp} \ln s) + Y_1^{\gamma\gamma} s^{-\eta_1}, \\
\sigma_{\Sigma^-p} = Z_{\Sigma p} + B_{\Sigma p} \ln s + Y_1^{\Sigma p} s^{-\eta_1} - Y_2^{\Sigma p} s^{-\eta_2}. \\
\rho_{pp}\sigma_{pp} = \frac{\pi B_{pp}}{2} - \frac{Y_1^{pp} s^{-\eta_1}}{\tan \left[\frac{1-\eta_1}{2} \pi \right]} - \frac{5 \cdot Y_2^{\pi p} s^{-\eta_2}}{\cot \left[\frac{1-\eta_2}{2} \pi \right]}, \\
\rho_{\bar{p}p}\sigma_{\bar{p}p} = \frac{\pi B_{pp}}{2} - \frac{Y_1^{pp} s^{-\eta_1}}{\tan \left[\frac{1-\eta_1}{2} \pi \right]} + \frac{5 \cdot Y_2^{\pi p} s^{-\eta_2}}{\cot \left[\frac{1-\eta_2}{2} \pi \right]}, \\
\rho_{\pi^+p}\sigma_{\pi^+p} = \frac{\pi B_{\pi p}}{2} - \frac{Y_1^{\pi p} s^{-\eta_1}}{\tan \left[\frac{1-\eta_1}{2} \pi \right]} - \frac{Y_2^{\pi p} s^{-\eta_2}}{\cot \left[\frac{1-\eta_2}{2} \pi \right]}, \\
\rho_{\pi^-p}\sigma_{\pi^-p} = \frac{\pi B_{\pi p}}{2} - \frac{Y_1^{\pi p} s^{-\eta_1}}{\tan \left[\frac{1-\eta_1}{2} \pi \right]} + \frac{Y_2^{\pi p} s^{-\eta_2}}{\cot \left[\frac{1-\eta_2}{2} \pi \right]}, \\
\rho_{K^+p}\sigma_{K^+p} = \frac{\pi B_{Kp}}{2} - \frac{Y_1^{Kp} s^{-\eta_1}}{\tan \left[\frac{1-\eta_1}{2} \pi \right]} - \frac{2Y_2^{\pi p} s^{-\eta_2}}{\cot \left[\frac{1-\eta_2}{2} \pi \right]}, \\
\rho_{K^-p}\sigma_{K^-p} = \frac{\pi B_{Kp}}{2} - \frac{Y_1^{Kp} s^{-\eta_1}}{\tan \left[\frac{1-\eta_1}{2} \pi \right]} + \frac{2 \cdot Y_2^{\pi p} s^{-\eta_2}}{\cot \left[\frac{1-\eta_2}{2} \pi \right]},
\end{array} \right.$$

Variable s is in the units $[GeV^2]$. The additional scale $s_1 = 1 [GeV^2]$ in terms with $(s/s_1)^{-\eta_{1,2}}$ is omitted for brevity.

Adjustable parameters naming. In total 19 parameters used:

$$\begin{array}{ll}
 \eta_1, \eta_2, \delta & - \text{ dimensionless} \\
 Z_{pp}, Z_{\pi p}, Z_{Kp}, Z_{\Sigma p}, B_{pp}, B_{\pi p}, B_{Kp}, B_{\Sigma p} & - [\text{mb}] \\
 Y_1^{pp}, Y_{1,2}^{\pi p}, Y_1^{Kp}, Y_{1,2}^{\Sigma p}, Y_1^{\gamma p}, Y_1^{\gamma\gamma} & - [\text{mb}]
 \end{array}$$

Scan-fits summary. 2000 database. Without cosmic data points.

$E_{\text{cm}}^{\text{min}}$ [GeV]	3	4	5	6	7	8	9	10
N_{dof} : ρ excluded	707	562	488	415	350	312	266	211
N_{dof} : ρ included	885	723	629	550	479	434	378	310
χ^2/dof : ρ excluded	2.16	1.17	0.92	0.84	0.87	0.86	0.84	0.74
χ^2/dof : ρ included	2.15	1.24	1.04	0.99	0.99	0.94	0.93	0.91

Details of the fit to the data in the whole domain of applicability

			χ^2/dof	=	0.99
			CL[%]	=	66.13
			Name of value	Numerical value	Error value
Breakdown of the CS data sample					
pp :	6.17066	102	η_1	0.21077046	0.0091272007
$\bar{p}p$:	6.27159	54	η_2	0.53045536	0.0069818493
π^+p :	6.19932	37	δ	0.0034249075	0.000043356802
π^-p :	6.08013	87	B_{pp}	6.4776681	0.24508299
K^+p :	6.06551	32	$B_{\pi p}$	4.9998686	0.23304409
K^-p :	6.08096	54	B_{Kp}	4.2223846	0.24781522
Σ^-p :	6.12189	9	$B_{\Sigma p}$	3.6789237	9.6871591
γp :	6.66455	32	Y_{pp1}	101.95344	3.1559926
$\gamma\gamma$:	6.	27	$Y_{\pi p1}$	66.086412	3.0626163
Breakdown of the ρ data sample					
pp :	6.13104	73	$Y_{\pi p2}$	6.1769888	0.19714977
$\bar{p}p$:	11.5382	11	Y_{Kp1}	48.309223	3.3058654
π^+p :	8.98072	8	$Y_{\Sigma p1}$	0.15507872	235.74587
π^-p :	7.56285	30	$Y_{\Sigma p2}$	-75.867711	195.02513
K^+p :	8.99347	8	$Y_{\gamma p1}$	0.27918515	0.013417982
K^-p :	11.5102	5	$Y_{\gamma\gamma 1}$	0.00071192352	0.000057910828
			Z_{pp}	-27.389097	3.8940536
			$Z_{\pi p}$	-24.431833	3.2103031
			Z_{Kp}	-18.478544	2.9460929
			$Z_{\Sigma p}$	9.3275262	116.81744

Model quality indicators:

	A^M	C_1^M	C_2^M	U^M	R_1^M	R_2^M	S_1^M	S_2^M
RR _c PL(19)	1.608	55.13	83.67	15.38	28.45	0.614	0.466	1.824

Repository:

computer - NPT1

directory - d:\MathemD\Kolja\Evela\Gauron\ (RRc)PL(19)

Appendix RR_cPL(19) (N^o32) χ^2/NoP by data samples

	CS data								
Reaction	pp	$\bar{p}p$	π^+p	π^-p	K^+p	K^-p	Σ^-p	γp	$\gamma\gamma$
χ^2/NoP	0.99	0.93	1.01	0.66	0.96	0.68	0.38	0.74	0.84

	ρ data					
Reaction	pp	$\bar{p}p$	π^+p	π^-p	K^+p	K^-p
χ^2/NoP	1.56	0.48	1.61	1.35	0.8	1.83

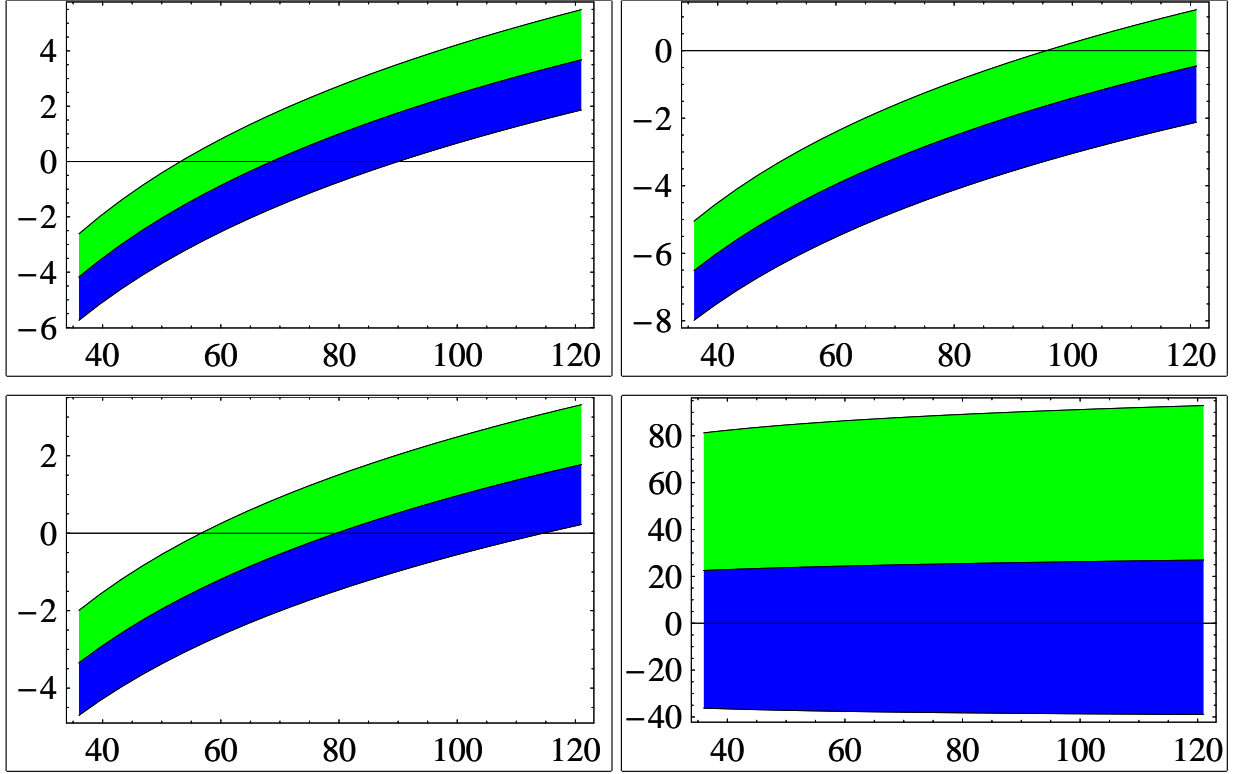


Figure 35: Pomeron contribution for pp , π^+p , K^+p and Σ^-p [mb] (Axis $X - s$ [GeV²])

	η_1	η_2	δ	B_{pp}	$B_{\pi p}$	B_{Kp}	$B_{\Sigma p}$	Y_{pp1}	$Y_{\pi p1}$	$Y_{\pi p2}$	Y_{Kp1}	$Y_{\Sigma p1}$	$Y_{\Sigma p2}$	$Y_{\gamma p1}$	$Y_{\gamma p2}$	Z_{pp}	$Z_{\pi p}$	Z_{Kp}	$Z_{\Sigma p}$	
η_1	100																			
η_2	20	100																		
δ	-56	-1.45	100																	
B_{pp}	-96.3	-12.4	56.7	100																
$B_{\pi p}$	-89.6	-19.4	50.1	86.2	100															
B_{Kp}	-64	-17.9	35.3	61.2	57.4	100														
$B_{\Sigma p}$	1.42	0.00152	-0.826	-1.39	-1.27	-0.895	100													
Y_{pp1}	-94.2	-6.97	57	99.6	84.3	59.5	-1.38	100												
$Y_{\pi p1}$	-89.3	-20	49.8	83.9	100															
$Y_{\pi p2}$	20.8	98.5	-1.55	-20.6	100															
Y_{Kp1}	-62.6	-18	34.4	58.1	56	100														
$Y_{\Sigma p1}$	1.49	0.33	-0.833	0.868	0.868	0.936	100													
$Y_{\Sigma p2}$	-1.42	0.0367	0.826	-0.936	-0.936	-0.936	100													
$Y_{\gamma p1}$	-96.3	-10.1	55.4	99.7	80.3	85.8	-1.43	100												
$Y_{\gamma p2}$	-90.1	-11.6	44.1	80.6	80.3	85.8	-1.34	100												
Z_{pp}	98.3	14.1	-57.2	-88	-62.6	-60.8	-92.2	100												
$Z_{\pi p}$	95	20.2	-53.1	-99	-60.8	-98.1	-91.4	100												
Z_{Kp}	77.5	19.8	-42.9	-74.2	-69.5	-98.1	-91.4	100												
$Z_{\Sigma p}$	-1.44	-0.0771	0.827	-100	0.909	0.888	-99.9	99.2	1.4	1.31	1.43	1.16	1.43	1.31	1.43	1.43	1.31	1.43	1.31	1.43

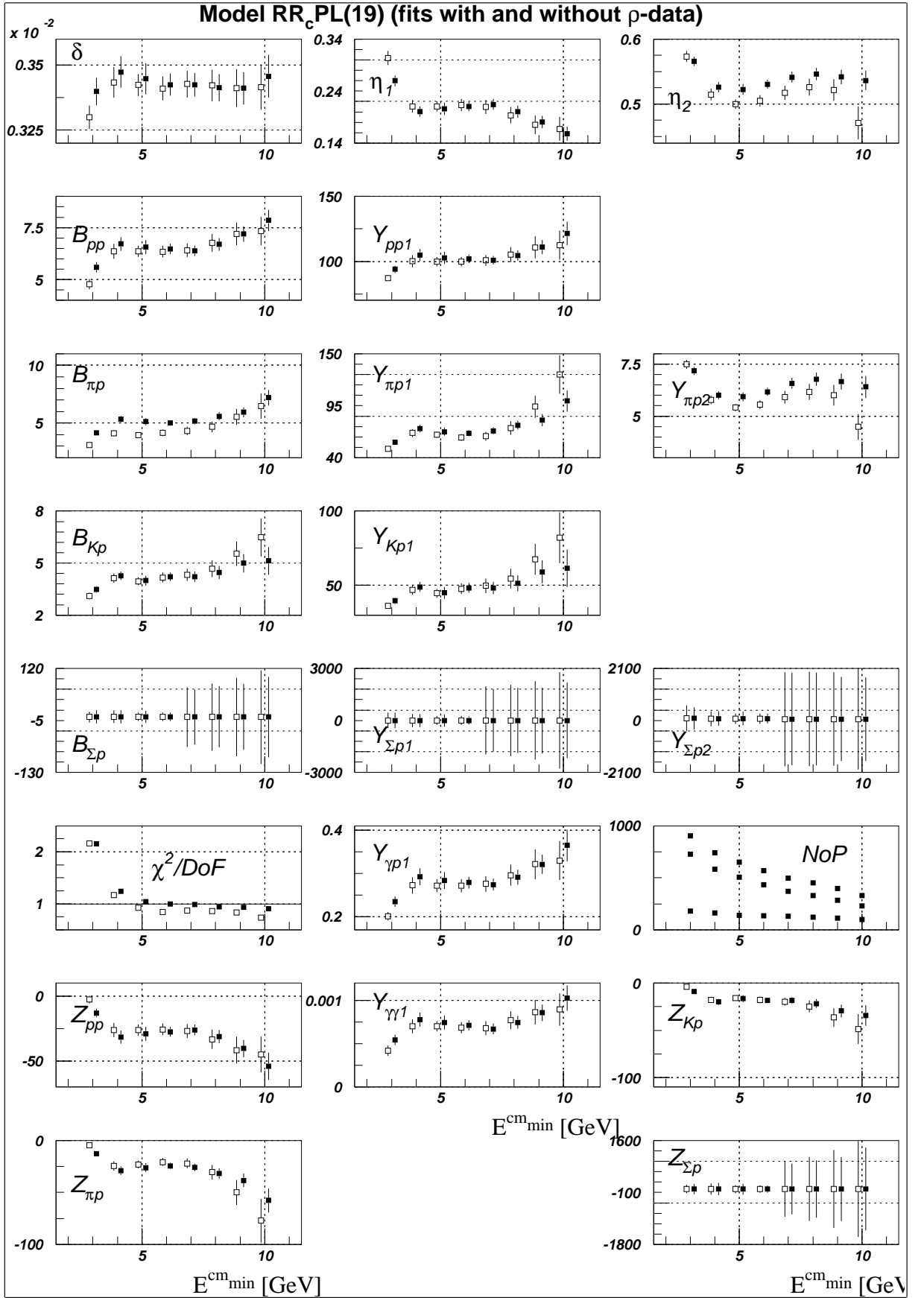


Figure 36: Bold (empty) symbol marks fits with (without) ρ data and are shifted to the right (left) in energy slightly for the cleareness

