

Polynomial Bgds, THERM Bgds fit together

| Centrality | System | Parameter | Methods | | | | |
|------------|--|-----------------|------------------|-------------------------------|------------------|-------------------------------|------------------------|
| | | | Separate Radii | | Shared Radii | | |
| | | | Unique λ | Share λ_{Conj} | Unique λ | Share λ_{Conj} | Share Single λ |
| 0-10% | ΛK^+ | λ | 1.37 | 1.37 | 1.97 | 1.91 | 1.83 |
| | $\bar{\Lambda} K^-$ | λ | 1.39 | | 2.00 | | |
| | ΛK^- | λ | 1.58 | 1.87 | 2.04 | 1.83 | |
| | $\bar{\Lambda} K^+$ | λ | 1.60 | | 2.07 | | |
| | $\Lambda K^+ \ \& \ \bar{\Lambda} K^-$ | R | 4.90 | 4.89 | 6.18 | 5.83 | 5.81 |
| | $\Lambda K^- \ \& \ \bar{\Lambda} K^+$ | R | 4.11 | 5.75 | | | |
| 10-30% | ΛK^+ | λ | 1.70 | 1.54 | 1.50 | 1.39 | 1.31 |
| | $\bar{\Lambda} K^-$ | λ | 1.51 | | 1.33 | | |
| | ΛK^- | λ | 1.08 | 1.18 | 1.43 | 1.31 | |
| | $\bar{\Lambda} K^+$ | λ | 1.10 | | 1.48 | | |
| | $\Lambda K^+ \ \& \ \bar{\Lambda} K^-$ | R | 4.78 | 4.68 | 4.75 | 4.53 | 4.50 |
| | $\Lambda K^- \ \& \ \bar{\Lambda} K^+$ | R | 3.05 | 4.05 | | | |
| 30-50% | ΛK^+ | λ | 1.30 | 1.23 | 1.16 | 1.02 | 1.07 |
| | $\bar{\Lambda} K^-$ | λ | 1.18 | | 1.06 | | |
| | ΛK^- | λ | 1.27 | 0.91 | 2.07 | 1.11 | |
| | $\bar{\Lambda} K^+$ | λ | 0.83 | | 1.06 | | |
| | $\Lambda K^+ \ \& \ \bar{\Lambda} K^-$ | R | 3.24 | 3.23 | 3.21 | 2.99 | 3.09 |
| | $\Lambda K^- \ \& \ \bar{\Lambda} K^+$ | R | 1.98 | 2.47 | | | |
| | $\Lambda K^+ \ \& \ \bar{\Lambda} K^-$ | $\mathbb{R}f_0$ | -1.13 | -1.13 | -1.13 | -1.09 | -1.12 |
| | | $\mathbb{I}f_0$ | 0.36 | 0.36 | 0.53 | 0.44 | 0.48 |
| | | d_0 | 1.09 | 1.11 | 1.02 | 0.99 | 1.01 |
| | $\Lambda K^- \ \& \ \bar{\Lambda} K^+$ | $\mathbb{R}f_0$ | 0.15 | 0.30 | 0.40 | 0.40 | 0.39 |
| | | $\mathbb{I}f_0$ | 0.30 | 0.40 | 0.41 | 0.45 | 0.45 |
| | | d_0 | 2.07 | -5.15 | -4.81 | -4.37 | -4.35 |

Table 1: Comparison: Polynomial non-flat background, THERMINATOR backgrounds fit together

Polynomial Bgds, THERM Bgds fit together(v2)

| Centrality | System | Parameter | Methods | | | | |
|---|---|-----------------|------------------|-------------------------------|------------------|-------------------------------|------------------------|
| | | | Separate Radii | | Shared Radii | | |
| | | | Unique λ | Share λ_{Conj} | Unique λ | Share λ_{Conj} | Share Single λ |
| 0-10% | ΛK^+ | λ | 1.37 | 1.37 | 1.97 | 1.91 | 1.83 |
| | $\bar{\Lambda} K^-$ | | 1.39 | | 2.00 | | |
| | ΛK^- | | 1.58 | 1.87 | 2.04 | 1.83 | |
| | $\bar{\Lambda} K^+$ | | 1.60 | | 2.07 | | |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | R | 4.90 | 4.89 | 6.18 | 5.83 | 5.81 |
| $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | 4.11 | | 5.75 | | | | |
| 10-30% | ΛK^+ | λ | 1.70 | 1.54 | 1.50 | 1.39 | 1.31 |
| | $\bar{\Lambda} K^-$ | | 1.51 | | 1.33 | | |
| | ΛK^- | | 1.08 | 1.18 | 1.43 | 1.31 | |
| | $\bar{\Lambda} K^+$ | | 1.10 | | 1.48 | | |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | R | 4.78 | 4.68 | 4.75 | 4.53 | 4.50 |
| $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | 3.05 | | 4.05 | | | | |
| 30-50% | ΛK^+ | λ | 1.30 | 1.23 | 1.16 | 1.02 | 1.07 |
| | $\bar{\Lambda} K^-$ | | 1.18 | | 1.06 | | |
| | ΛK^- | | 1.27 | 0.91 | 2.07 | 1.11 | |
| | $\bar{\Lambda} K^+$ | | 0.83 | | 1.06 | | |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | R | 3.24 | 3.23 | 3.21 | 2.99 | 3.09 |
| $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | 1.98 | | 2.47 | | | | |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | $\mathbb{R}f_0$ | -1.13 | -1.13 | -1.13 | -1.09 | -1.12 |
| | | $\mathbb{I}f_0$ | 0.36 | 0.36 | 0.53 | 0.44 | 0.48 |
| | | d_0 | 1.09 | 1.11 | 1.02 | 0.99 | 1.01 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | $\mathbb{R}f_0$ | 0.15 | 0.30 | 0.40 | 0.40 | 0.39 |
| | | $\mathbb{I}f_0$ | 0.30 | 0.40 | 0.41 | 0.45 | 0.45 |
| | | d_0 | 2.07 | -5.15 | -4.81 | -4.37 | -4.35 |

Table 2: Comparison: Polynomial non-flat background, THERMINATOR backgrounds fit together(v2)

Linear Bgds

| Centrality | System | Parameter | Methods | | | | |
|------------|---|-----------------|------------------|-------------------------------|------------------|-------------------------------|------------------------|
| | | | Separate Radii | | Shared Radii | | |
| | | | Unique λ | Share λ_{Conj} | Unique λ | Share λ_{Conj} | Share Single λ |
| 0-10% | ΛK^+ | λ | 1.38 | 1.37 | 1.85 | 1.75 | 1.65 |
| | $\bar{\Lambda} K^-$ | λ | 1.39 | | 1.87 | | |
| | ΛK^- | λ | 2.04 | 1.63 | 1.87 | 1.64 | |
| | $\bar{\Lambda} K^+$ | λ | 2.07 | | 1.91 | | |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | R | 5.27 | 5.25 | 6.22 | 5.83 | 5.81 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 6.51 | 5.67 | | | |
| 10-30% | ΛK^+ | λ | 1.68 | 1.49 | 1.56 | 1.39 | 1.31 |
| | $\bar{\Lambda} K^-$ | λ | 1.46 | | 1.36 | | |
| | ΛK^- | λ | 1.43 | 1.16 | 1.46 | 1.30 | |
| | $\bar{\Lambda} K^+$ | λ | 1.47 | | 1.50 | | |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | R | 4.94 | 4.81 | 4.86 | 4.59 | 4.57 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 4.70 | 4.14 | | | |
| 30-50% | ΛK^+ | λ | 1.19 | 1.16 | 1.13 | 1.01 | 1.04 |
| | $\bar{\Lambda} K^-$ | λ | 1.15 | | 1.09 | | |
| | ΛK^- | λ | 1.92 | 0.88 | 2.00 | 1.07 | |
| | $\bar{\Lambda} K^+$ | λ | 1.01 | | 1.03 | | |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | R | 3.28 | 3.28 | 3.24 | 3.03 | 3.11 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 3.11 | 2.54 | | | |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | $\mathbb{R}f_0$ | -1.22 | -1.23 | -1.18 | -1.16 | -1.20 |
| | | $\mathbb{I}f_0$ | 0.53 | 0.52 | 0.64 | 0.53 | 0.59 |
| | | d_0 | 1.12 | 1.14 | 1.07 | 1.01 | 1.07 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | $\mathbb{R}f_0$ | 0.40 | 0.33 | 0.43 | 0.43 | 0.42 |
| | | $\mathbb{I}f_0$ | 0.44 | 0.47 | 0.46 | 0.52 | 0.51 |
| | | d_0 | -5.20 | -4.85 | -4.78 | -4.20 | -4.22 |

Table 3: Comparison: Linear non-flat background

Stavinsky method, no non-flat background in fit

| Centrality | System | Parameter | Methods | | | | |
|------------|--|-----------------|------------------|-------------------------------|------------------|-------------------------------|------------------------|
| | | | Separate Radii | | Shared Radii | | |
| | | | Unique λ | Share λ_{Conj} | Unique λ | Share λ_{Conj} | Share Single λ |
| 0-10% | ΛK^+ | λ | 0.95 | 0.93 | 1.34 | 1.21 | 1.05 |
| | $\bar{\Lambda} K^-$ | λ | 0.90 | | 1.27 | | |
| | ΛK^- | λ | 2.38 | 1.28 | 2.15 | 1.15 | |
| | $\bar{\Lambda} K^+$ | λ | 2.26 | | 2.06 | | |
| | $\Lambda K^+ \ \& \ \bar{\Lambda} K^-$ | R | 5.44 | 5.43 | 5.75 | 5.25 | 5.04 |
| | $\Lambda K^- \ \& \ \bar{\Lambda} K^+$ | R | 5.54 | 5.06 | | | |
| 10-30% | ΛK^+ | λ | 0.71 | 0.68 | 0.87 | 0.80 | 0.82 |
| | $\bar{\Lambda} K^-$ | λ | 0.67 | | 0.81 | | |
| | ΛK^- | λ | 1.56 | 0.90 | 1.47 | 0.88 | |
| | $\bar{\Lambda} K^+$ | λ | 1.77 | | 1.66 | | |
| | $\Lambda K^+ \ \& \ \bar{\Lambda} K^-$ | R | 4.21 | 4.17 | 4.16 | 3.90 | 3.99 |
| | $\Lambda K^- \ \& \ \bar{\Lambda} K^+$ | R | 3.89 | 3.57 | | | |
| 30-50% | ΛK^+ | λ | 0.98 | 1.11 | 0.70 | 0.82 | 0.88 |
| | $\bar{\Lambda} K^-$ | λ | 1.14 | | 0.82 | | |
| | ΛK^- | λ | 4.14 | 0.84 | 3.99 | 0.98 | |
| | $\bar{\Lambda} K^+$ | λ | 1.38 | | 1.36 | | |
| | $\Lambda K^+ \ \& \ \bar{\Lambda} K^-$ | R | 4.01 | 4.07 | 3.03 | 3.03 | 3.17 |
| | $\Lambda K^- \ \& \ \bar{\Lambda} K^+$ | R | 2.65 | 2.36 | | | |
| | $\Lambda K^+ \ \& \ \bar{\Lambda} K^-$ | $\mathbb{R}f_0$ | -1.96 | -1.92 | -1.51 | -1.46 | -1.52 |
| | | $\mathbb{I}f_0$ | 1.13 | 1.12 | 0.77 | 0.57 | 0.65 |
| | | d_0 | 0.58 | 0.51 | -0.47 | -0.42 | -0.44 |
| | $\Lambda K^- \ \& \ \bar{\Lambda} K^+$ | $\mathbb{R}f_0$ | 0.24 | 0.32 | 0.34 | 0.53 | 0.55 |
| | | $\mathbb{I}f_0$ | 0.27 | 0.54 | 0.36 | 0.75 | 0.82 |
| | | d_0 | 6.28 | 4.36 | 4.13 | 2.35 | 2.14 |

Table 4: Comparison: Stavinsky method, no non-flat background in fit

Separate radii, unique λ

| Centrality | System | Parameter | Methods | | | | |
|------------|------------------------------------|-----------------|-----------|----------|---------------|-----------------|----------|
| | | | Poly. Bgd | Lin. Bgd | Stav.(No Bgd) | Stav.(Lin. Bgd) | Method 5 |
| 0-10% | ΛK^+ | λ | 1.37 | 1.38 | 0.95 | 0.00 | 0.00 |
| | $\bar{\Lambda} K^-$ | λ | 1.39 | 1.39 | 0.90 | 0.00 | 0.00 |
| | ΛK^- | λ | 1.58 | 2.04 | 2.38 | 0.00 | 0.00 |
| | $\bar{\Lambda} K^+$ | λ | 1.60 | 2.07 | 2.26 | 0.00 | 0.00 |
| | $\Lambda K^+ \& \bar{\Lambda} K^-$ | R | 4.90 | 5.27 | 5.44 | 0.00 | 0.00 |
| | $\Lambda K^- \& \bar{\Lambda} K^+$ | R | 4.11 | 6.51 | 5.54 | 0.00 | 0.00 |
| 10-30% | ΛK^+ | λ | 1.70 | 1.68 | 0.71 | 0.00 | 0.00 |
| | $\bar{\Lambda} K^-$ | λ | 1.51 | 1.46 | 0.67 | 0.00 | 0.00 |
| | ΛK^- | λ | 1.08 | 1.43 | 1.56 | 0.00 | 0.00 |
| | $\bar{\Lambda} K^+$ | λ | 1.10 | 1.47 | 1.77 | 0.00 | 0.00 |
| | $\Lambda K^+ \& \bar{\Lambda} K^-$ | R | 4.78 | 4.94 | 4.21 | 0.00 | 0.00 |
| | $\Lambda K^- \& \bar{\Lambda} K^+$ | R | 3.05 | 4.70 | 3.89 | 0.00 | 0.00 |
| 30-50% | ΛK^+ | λ | 1.30 | 1.19 | 0.98 | 0.00 | 0.00 |
| | $\bar{\Lambda} K^-$ | λ | 1.18 | 1.15 | 1.14 | 0.00 | 0.00 |
| | ΛK^- | λ | 1.27 | 1.92 | 4.14 | 0.00 | 0.00 |
| | $\bar{\Lambda} K^+$ | λ | 0.83 | 1.01 | 1.38 | 0.00 | 0.00 |
| | $\Lambda K^+ \& \bar{\Lambda} K^-$ | R | 3.24 | 3.28 | 4.01 | 0.00 | 0.00 |
| | $\Lambda K^- \& \bar{\Lambda} K^+$ | R | 1.98 | 3.11 | 2.65 | 0.00 | 0.00 |
| | $\Lambda K^+ \& \bar{\Lambda} K^-$ | $\mathbb{R}f_0$ | -1.13 | -1.22 | -1.96 | 0.00 | 0.00 |
| | | $\mathbb{I}f_0$ | 0.36 | 0.53 | 1.13 | 0.00 | 0.00 |
| | | d_0 | 1.09 | 1.12 | 0.58 | 0.00 | 0.00 |
| | $\Lambda K^- \& \bar{\Lambda} K^+$ | $\mathbb{R}f_0$ | 0.15 | 0.40 | 0.24 | 0.00 | 0.00 |
| | | $\mathbb{I}f_0$ | 0.30 | 0.44 | 0.27 | 0.00 | 0.00 |
| | | d_0 | 2.07 | -5.20 | 6.28 | 0.00 | 0.00 |

Table 5: Compare non-flat background treatment methods: Separate radii, unique λ

Separate radii, unique λ (v2)

| Centrality | System | Parameter | Methods | | |
|------------|---|-----------|-----------|----------|---------------|
| | | | Poly. Bgd | Lin. Bgd | Stav.(No Bgd) |
| 0-10% | ΛK^+ | λ | 1.37 | 1.38 | 0.95 |
| | $\bar{\Lambda} K^-$ | λ | 1.39 | 1.39 | 0.90 |
| | ΛK^- | λ | 1.58 | 2.04 | 2.38 |
| | $\bar{\Lambda} K^+$ | λ | 1.60 | 2.07 | 2.26 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | R | 4.90 | 5.27 | 5.44 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 4.11 | 6.51 | 5.54 |
| 10-30% | ΛK^+ | λ | 1.70 | 1.68 | 0.71 |
| | $\bar{\Lambda} K^-$ | λ | 1.51 | 1.46 | 0.67 |
| | ΛK^- | λ | 1.08 | 1.43 | 1.56 |
| | $\bar{\Lambda} K^+$ | λ | 1.10 | 1.47 | 1.77 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | R | 4.78 | 4.94 | 4.21 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 3.05 | 4.70 | 3.89 |
| 30-50% | ΛK^+ | λ | 1.30 | 1.19 | 0.98 |
| | $\bar{\Lambda} K^-$ | λ | 1.18 | 1.15 | 1.14 |
| | ΛK^- | λ | 1.27 | 1.92 | 4.14 |
| | $\bar{\Lambda} K^+$ | λ | 0.83 | 1.01 | 1.38 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | R | 3.24 | 3.28 | 4.01 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 1.98 | 3.11 | 2.65 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | $\Re f_0$ | -1.13 | -1.22 | -1.96 |
| | | $\Im f_0$ | 0.36 | 0.53 | 1.13 |
| | | d_0 | 1.09 | 1.12 | 0.58 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | $\Re f_0$ | 0.15 | 0.40 | 0.24 |
| | | $\Im f_0$ | 0.30 | 0.44 | 0.27 |
| | | d_0 | 2.07 | -5.20 | 6.28 |

Table 6: Compare non-flat background treatment methods: Separate radii, unique λ (v2)

Separate radii, share λ_{Conj}

| Centrality | System | Parameter | Methods | | | | |
|------------|---|-----------------|-----------|----------|---------------|-----------------|----------|
| | | | Poly. Bgd | Lin. Bgd | Stav.(No Bgd) | Stav.(Lin. Bgd) | Method 5 |
| 0-10% | ΛK^+ $\bar{\Lambda} K^-$ | λ | 1.37 | 1.37 | 0.93 | 0.00 | 0.00 |
| | ΛK^- $\bar{\Lambda} K^+$ | λ | 1.87 | 1.63 | 1.28 | 0.00 | 0.00 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | R | 4.89 | 5.25 | 5.43 | 0.00 | 0.00 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 5.75 | 5.67 | 5.06 | 0.00 | 0.00 |
| 10-30% | ΛK^+ $\bar{\Lambda} K^-$ | λ | 1.54 | 1.49 | 0.68 | 0.00 | 0.00 |
| | ΛK^- $\bar{\Lambda} K^+$ | λ | 1.18 | 1.16 | 0.90 | 0.00 | 0.00 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | R | 4.68 | 4.81 | 4.17 | 0.00 | 0.00 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 4.05 | 4.14 | 3.57 | 0.00 | 0.00 |
| 30-50% | ΛK^+ $\bar{\Lambda} K^-$ | λ | 1.23 | 1.16 | 1.11 | 0.00 | 0.00 |
| | ΛK^- $\bar{\Lambda} K^+$ | λ | 0.91 | 0.88 | 0.84 | 0.00 | 0.00 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | R | 3.23 | 3.28 | 4.07 | 0.00 | 0.00 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 2.47 | 2.54 | 2.36 | 0.00 | 0.00 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | $\mathbb{R}f_0$ | -1.13 | -1.23 | -1.92 | 0.00 | 0.00 |
| | | $\mathbb{I}f_0$ | 0.36 | 0.52 | 1.12 | 0.00 | 0.00 |
| | | d_0 | 1.11 | 1.14 | 0.51 | 0.00 | 0.00 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | $\mathbb{R}f_0$ | 0.30 | 0.33 | 0.32 | 0.00 | 0.00 |
| | | $\mathbb{I}f_0$ | 0.40 | 0.47 | 0.54 | 0.00 | 0.00 |
| | | d_0 | -5.15 | -4.85 | 4.36 | 0.00 | 0.00 |

Table 7: Compare non-flat background treatment methods: Separate radii, share λ_{Conj}

Separate radii, share $\lambda_{\text{Conj}}(v2)$

| Centrality | System | Parameter | Methods | | |
|------------|--|-----------------|-----------|----------|---------------|
| | | | Poly. Bgd | Lin. Bgd | Stav.(No Bgd) |
| 0-10% | ΛK^+ $\bar{\Lambda} K^-$ | λ | 1.37 | 1.37 | 0.93 |
| | | λ | 1.87 | 1.63 | 1.28 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 4.89 | 5.25 | 5.43 |
| | | R | 5.75 | 5.67 | 5.06 |
| 10-30% | ΛK^+ $\bar{\Lambda} K^-$ | λ | 1.54 | 1.49 | 0.68 |
| | | λ | 1.18 | 1.16 | 0.90 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 4.68 | 4.81 | 4.17 |
| | | R | 4.05 | 4.14 | 3.57 |
| 30-50% | ΛK^+ $\bar{\Lambda} K^-$ | λ | 1.23 | 1.16 | 1.11 |
| | | λ | 0.91 | 0.88 | 0.84 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 3.23 | 3.28 | 4.07 |
| | | R | 2.47 | 2.54 | 2.36 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | $\mathbb{R}f_0$ | -1.13 | -1.23 | -1.92 |
| | | $\mathbb{I}f_0$ | 0.36 | 0.52 | 1.12 |
| | | d_0 | 1.11 | 1.14 | 0.51 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | $\mathbb{R}f_0$ | 0.30 | 0.33 | 0.32 |
| | | $\mathbb{I}f_0$ | 0.40 | 0.47 | 0.54 |
| | | d_0 | -5.15 | -4.85 | 4.36 |

Table 8: Compare non-flat background treatment methods: Separate radii, share $\lambda_{\text{Conj}}(v2)$

Shared radii, unique λ

| Centrality | System | Parameter | Methods | | | | |
|------------|--|-----------------|-----------|----------|---------------|-----------------|----------|
| | | | Poly. Bgd | Lin. Bgd | Stav.(No Bgd) | Stav.(Lin. Bgd) | Method 5 |
| 0-10% | ΛK^+ | λ | 1.97 | 1.85 | 1.34 | 0.00 | 0.00 |
| | $\bar{\Lambda} K^-$ | λ | 2.00 | 1.87 | 1.27 | 0.00 | 0.00 |
| | ΛK^- | λ | 2.04 | 1.87 | 2.15 | 0.00 | 0.00 |
| | $\bar{\Lambda} K^+$ | λ | 2.07 | 1.91 | 2.06 | 0.00 | 0.00 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 6.18 | 6.22 | 5.75 | 0.00 | 0.00 |
| 10-30% | ΛK^+ | λ | 1.50 | 1.56 | 0.87 | 0.00 | 0.00 |
| | $\bar{\Lambda} K^-$ | λ | 1.33 | 1.36 | 0.81 | 0.00 | 0.00 |
| | ΛK^- | λ | 1.43 | 1.46 | 1.47 | 0.00 | 0.00 |
| | $\bar{\Lambda} K^+$ | λ | 1.48 | 1.50 | 1.66 | 0.00 | 0.00 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 4.75 | 4.86 | 4.16 | 0.00 | 0.00 |
| 30-50% | ΛK^+ | λ | 1.16 | 1.13 | 0.70 | 0.00 | 0.00 |
| | $\bar{\Lambda} K^-$ | λ | 1.06 | 1.09 | 0.82 | 0.00 | 0.00 |
| | ΛK^- | λ | 2.07 | 2.00 | 3.99 | 0.00 | 0.00 |
| | $\bar{\Lambda} K^+$ | λ | 1.06 | 1.03 | 1.36 | 0.00 | 0.00 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 3.21 | 3.24 | 3.03 | 0.00 | 0.00 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | $\mathbb{R}f_0$ | -1.13 | -1.18 | -1.51 | 0.00 | 0.00 |
| | | $\mathbb{I}f_0$ | 0.53 | 0.64 | 0.77 | 0.00 | 0.00 |
| | | d_0 | 1.02 | 1.07 | -0.47 | 0.00 | 0.00 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | $\mathbb{R}f_0$ | 0.40 | 0.43 | 0.34 | 0.00 | 0.00 |
| | | $\mathbb{I}f_0$ | 0.41 | 0.46 | 0.36 | 0.00 | 0.00 |
| | | d_0 | -4.81 | -4.78 | 4.13 | 0.00 | 0.00 |

Table 9: Compare non-flat background treatment methods: Shared radii, unique λ

Shared radii, share λ_{Conj}

| Centrality | System | Parameter | Methods | | | | |
|------------|--|-----------------|-----------|----------|---------------|-----------------|----------|
| | | | Poly. Bgd | Lin. Bgd | Stav.(No Bgd) | Stav.(Lin. Bgd) | Method 5 |
| 0-10% | ΛK^+ $\bar{\Lambda} K^-$ | λ | 1.91 | 1.75 | 1.21 | 0.00 | 0.00 |
| | ΛK^- $\bar{\Lambda} K^+$ | λ | 1.83 | 1.64 | 1.15 | 0.00 | 0.00 |
| | $\Lambda K^+ \& \bar{\Lambda} K^-$ $\Lambda K^- \& \bar{\Lambda} K^+$ | R | 5.83 | 5.83 | 5.25 | 0.00 | 0.00 |
| 10-30% | ΛK^+ $\bar{\Lambda} K^-$ | λ | 1.39 | 1.39 | 0.80 | 0.00 | 0.00 |
| | ΛK^- $\bar{\Lambda} K^+$ | λ | 1.31 | 1.30 | 0.88 | 0.00 | 0.00 |
| | $\Lambda K^+ \& \bar{\Lambda} K^-$ $\Lambda K^- \& \bar{\Lambda} K^+$ | R | 4.53 | 4.59 | 3.90 | 0.00 | 0.00 |
| 30-50% | ΛK^+ $\bar{\Lambda} K^-$ | λ | 1.02 | 1.01 | 0.82 | 0.00 | 0.00 |
| | ΛK^- $\bar{\Lambda} K^+$ | λ | 1.11 | 1.07 | 0.98 | 0.00 | 0.00 |
| | $\Lambda K^+ \& \bar{\Lambda} K^-$ $\Lambda K^- \& \bar{\Lambda} K^+$ | R | 2.99 | 3.03 | 3.03 | 0.00 | 0.00 |
| | $\Lambda K^+ \& \bar{\Lambda} K^-$ | $\mathbb{R}f_0$ | -1.09 | -1.16 | -1.46 | 0.00 | 0.00 |
| | | $\mathbb{I}f_0$ | 0.44 | 0.53 | 0.57 | 0.00 | 0.00 |
| | | d_0 | 0.99 | 1.01 | -0.42 | 0.00 | 0.00 |
| | $\Lambda K^- \& \bar{\Lambda} K^+$ | $\mathbb{R}f_0$ | 0.40 | 0.43 | 0.53 | 0.00 | 0.00 |
| | | $\mathbb{I}f_0$ | 0.45 | 0.52 | 0.75 | 0.00 | 0.00 |
| | | d_0 | -4.37 | -4.20 | 2.35 | 0.00 | 0.00 |

Table 10: Compare non-flat background treatment methods: Shared radii, share λ_{Conj}

Shared radii, share single λ

| Centrality | System | Parameter | Methods | | | | |
|------------|--|-----------------|-----------|----------|---------------|-----------------|----------|
| | | | Poly. Bgd | Lin. Bgd | Stav.(No Bgd) | Stav.(Lin. Bgd) | Method 5 |
| 0-10% | ΛK^+ $\bar{\Lambda} K^-$ ΛK^- $\bar{\Lambda} K^+$ | λ | 1.83 | 1.65 | 1.05 | 0.00 | 0.00 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 5.81 | 5.81 | 5.04 | 0.00 | 0.00 |
| 10-30% | ΛK^+ $\bar{\Lambda} K^-$ ΛK^- $\bar{\Lambda} K^+$ | λ | 1.31 | 1.31 | 0.82 | 0.00 | 0.00 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 4.50 | 4.57 | 3.99 | 0.00 | 0.00 |
| 30-50% | ΛK^+ $\bar{\Lambda} K^-$ ΛK^- $\bar{\Lambda} K^+$ | λ | 1.07 | 1.04 | 0.88 | 0.00 | 0.00 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 3.09 | 3.11 | 3.17 | 0.00 | 0.00 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | $\mathbb{R}f_0$ | -1.12 | -1.20 | -1.52 | 0.00 | 0.00 |
| | | $\mathbb{I}f_0$ | 0.48 | 0.59 | 0.65 | 0.00 | 0.00 |
| | | d_0 | 1.01 | 1.07 | -0.44 | 0.00 | 0.00 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | $\mathbb{R}f_0$ | 0.39 | 0.42 | 0.55 | 0.00 | 0.00 |
| | | $\mathbb{I}f_0$ | 0.45 | 0.51 | 0.82 | 0.00 | 0.00 |
| | | d_0 | -4.35 | -4.22 | 2.14 | 0.00 | 0.00 |

Table 11: Compare non-flat background treatment methods: Shared radii, share single λ

Shared radii, share single $\lambda(v_2)$

| Centrality | System | Parameter | Methods | | |
|------------|--|-----------------|-----------|----------|---------------|
| | | | Poly. Bgd | Lin. Bgd | Stav.(No Bgd) |
| 0-10% | ΛK^+ $\bar{\Lambda} K^-$ ΛK^- $\bar{\Lambda} K^+$ | λ | 1.83 | 1.65 | 1.05 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 5.81 | 5.81 | 5.04 |
| 10-30% | ΛK^+ $\bar{\Lambda} K^-$ ΛK^- $\bar{\Lambda} K^+$ | λ | 1.31 | 1.31 | 0.82 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 4.50 | 4.57 | 3.99 |
| 30-50% | ΛK^+ $\bar{\Lambda} K^-$ ΛK^- $\bar{\Lambda} K^+$ | λ | 1.07 | 1.04 | 0.88 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | R | 3.09 | 3.11 | 3.17 |
| | $\Lambda K^+ \text{ \& } \bar{\Lambda} K^-$ | $\mathbb{R}f_0$ | -1.12 | -1.20 | -1.52 |
| | | $\mathbb{I}f_0$ | 0.48 | 0.59 | 0.65 |
| | | d_0 | 1.01 | 1.07 | -0.44 |
| | $\Lambda K^- \text{ \& } \bar{\Lambda} K^+$ | $\mathbb{R}f_0$ | 0.39 | 0.42 | 0.55 |
| | | $\mathbb{I}f_0$ | 0.45 | 0.51 | 0.82 |
| | | d_0 | -4.35 | -4.22 | 2.14 |

Table 12: Compare non-flat background treatment methods: Shared radii, share single $\lambda(v_2)$