## **PSALTer results panel**

	$^{1^{+}}\mathcal{A}^{\ }_{\alpha\beta}$	$\overset{1^{+}}{\cdot} \mathscr{R}^{\scriptscriptstyle \perp}{}_{\alpha\beta}$	$1^+_{\cdot}f^{\parallel}_{lphaeta}$	$^{1^{-}}\!\mathcal{B}_{\alpha}$	$^{1\cdot}\mathcal{A}^{\parallel}_{~lpha}$	$^{1}$ $\mathscr{H}^{\perp}{}_{lpha}$	$^{1}f^{\parallel}_{\alpha}$	$^1f^{_\perp}{}_{lpha}$	βχ			+ 2	]		
$\frac{1}{\epsilon}$	$(-6 \lambda. +6 k^2 (2r. +r.) + t. +4 t.)$		$-\frac{i \ k(6 \ \lambda + t_1 - 2 \ t_1)}{3 \ \sqrt{2}}$	0	0	0 0		0	2 σ <sup>  </sup> αβχ	0	0	$\frac{1}{\lambda + k^2 r + \frac{t}{2}}$			
	$-\frac{6\lambda + t \cdot 2t}{3\sqrt{2}}$	$\frac{t_1+t_2}{\frac{1}{3}}$	$\frac{1}{3} i k(t_1 + t_2)$	0	0	0 0		0		( ++ ( ) (	$ \begin{array}{c} z_{K} \left(z_{1}, z_{1}, z_{1}, z_{1}, z_{1}, z_{2}, z_{1}, z_{1}, z_{2}, z_{1}, z_{1}, z_{1}, z_{1}, z_{1}, z_{2}, $	T.			
	$\frac{i  k(6  \lambda, +t, -2  t_1)}{3  \sqrt{2}}$	$-\frac{1}{3}i k(t_1 + t_2)$	$\frac{1}{3}k^2(t_1+t_2)$	0	0	0 0		0	$2^+\tau^{\parallel}_{\alpha\beta}$	2 \(\lambda + t_1\)		0			
	0	0		$-6 \lambda. + \frac{v}{2} + 4 k^2 (r_1 + r_2 + r_3)$		$\frac{12 \lambda \cdot -v}{6 \sqrt{2}}$	0	$\frac{1}{6} i k(12 \lambda - v.)$	2+	i √2(2 λ +	$\frac{1}{3} + \frac{1}{4} + \frac{1}$	ε. 4			
	0	0	þ	$-2\lambda . + \frac{v}{6} + 2k^{2}(r_{1} + r_{4} + r_{5})$ $12\lambda . v.$	$\frac{\frac{1}{18} \left(-6 \lambda. + v. + 3 \left(6 k^2 \left(r_1 + r_2 + r_3\right) + t_1\right)\right)}{24 \lambda. v. + 6 t.}$		0	$\frac{1}{18} i \ k(24 \lambda v. + 6 \ t.)$ $i \ k(12 \lambda. + v. + 12 t.)$				rt			
	0	0	0	6 √2	18 √2	$\frac{1}{36} (12 \lambda_{.} + v_{.} + 12 t_{.})$	0	18 √2		(11.00)	(2 \lambda +t; ) (2 \lambda +t; )				
	0	0	p p	$k\left(-2i\lambda + \frac{i\nu}{6}\right)$	$-\frac{1}{18} i \ k(24 \lambda v. + 6 \ t.)$	$ \begin{array}{c c} 0 & 0 \\ \frac{i \ k(12 \ \lambda + v + 12 \ t_{\cdot})}{18 \ \sqrt{2}} \end{array} $	0	$\frac{1}{18} k^2 (12 \lambda_{.} + v_{.} + 12 t_{.})$	$^{2^{+}}\sigma^{\parallel}_{\alpha\beta}$	k <sup>2</sup> (λ +t <sub>1</sub> )	$\frac{k \cdot (z_{11} - z_{12} + r_{11})(\lambda + r_{11})}{1 \cdot \sqrt{2}(2 \cdot \lambda + r_{11})}$ $= \frac{1}{2} \sqrt{2} \cdot (2 \cdot \lambda + r_{11})$ $= \frac{2}{2} \sqrt{2} \cdot (2 \cdot r_{12} - r_{12} + r_{12})(\lambda + r_{11}) + \lambda \cdot (2 \cdot \lambda + r_{12})$	0			
_	. ·								2.	1/4 × 1 × 1/4	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	7			
a X a	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$_{\alpha}^{\beta}\partial_{\delta}\mathcal{A}_{\chi\beta}^{\ \ \delta})+$													
2 γρ' α = 0'αχ	βα × (	- χ'Ααβ <sub>α</sub> δ <sub>α</sub>			±°	1				2+ 0∥ † <sup>αβ</sup>	$^{2^{+}}$ $^{\ell}$ $^{\parallel}$ $^{\dagger}$	2 o∥ † <sup>αβχ</sup>			
1go 0 0 1	<b>4</b>	$\mathcal{B}^{\alpha}\partial_{\chi}\mathcal{A}_{\beta\alpha}^{\ \chi} + \partial_{\delta}\mathcal{A}_{\chi\beta}^{\ \delta} - 2 \partial^{\chi}\mathcal{A}^{\alpha\beta}$		д <sup>абх</sup> -	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				Multiplicities						
ď		$-4 \partial^{\beta} \mathcal{B}^{\alpha} \partial_{\chi} \mathcal{A}_{\beta \alpha}^{\ \chi}$ $\mathcal{A}^{\alpha\beta\chi} \partial_{\delta} \mathcal{A}_{\chi \beta}^{\ \delta} -2$	+ '8	gδσα <sup>ωχ</sup> - β <sub>A</sub> χ <sub>cω</sub> δ <sup>ο</sup> σ <sup>ωχ</sup> )+ δ δβα, δβα <sup>σ</sup> + δ <sup>ο</sup> σ <sup>ωρχ</sup> +2 δβα <sub>χ κω</sub> δ <sup>ο</sup> σ <sup>ωρχ</sup> 2] α z α y α x α t	0 0 0 0			+ 2.	Multip	1	1 1	ю	m m	m	
	ab = a + 24 $ab = a$ $b$ $ab = a$ $b$ $ab = a$ $b$ $b$ $ab = a$ $b$ $b$ $b$ $c$ $ab = a$ $b$ $c$ $ab = a$ $d$	$\partial^{x} f^{a\beta}$ ))+ $\partial^{\beta} \mathcal{B}^{\alpha} \partial_{x} \mathcal{A}_{\alpha\beta}^{\ \ x} -4 \partial^{\beta}_{\alpha}$ $\partial^{\delta} \mathcal{A}_{\betax}^{\ \ \delta} + \partial_{\alpha} \mathcal{A}^{\alpha\beta\chi}$		$ _{\alpha\chi} \beta \partial^{\beta} \mathcal{A}^{\alpha\beta\chi} -$ $+ \partial_{\beta} \mathcal{A}_{\chi} {}_{\alpha\beta} \partial^{\beta} \mathcal{A}^{\alpha\beta\chi} ) +$ $^{\alpha} + 6 \partial_{\beta} \mathcal{B}_{\alpha} \partial^{\beta} \mathcal{B}^{\alpha} +$ $^{\alpha\chi} \partial^{\delta} \mathcal{A}^{\alpha\beta\chi} + 2 \partial_{\beta} \mathcal{A}$ $^{\alpha\chi} \partial^{\delta} \mathcal{A}^{\alpha\beta\chi} + 2 \partial_{\beta} \mathcal{A}$ $^{\chi} \mathcal{A}_{\chi} z] d z d y d x$	$\frac{1}{3 \cdot 4 \cdot 2r_4)}$ 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<u>e</u> 0 0 0	0	$\frac{0}{+k^2r}$							
) a ()	A. (8 $^{3}\partial_{\beta}\mathcal{B}$ $^{x}+4$ $+12$ $(\mathcal{A}^{\alpha\beta})$ $^{6}\partial_{x}f_{\alpha}$	$\begin{split} \mathcal{A}_{\alpha_{\chi}\;\beta}(\mathcal{A}^{a\beta_{\chi}} + 4\;\partial^{\chi}f^{a\beta})) + \\ + 4\;\partial_{\beta}\mathcal{B}_{\alpha}\partial^{\beta}\mathcal{B}^{\alpha} + 4\;\partial^{\beta}\mathcal{B}^{\alpha}\partial_{\chi}\mathcal{A}_{\alpha\beta}^{\;\;\chi} \\ \partial_{\delta}\mathcal{A}_{\beta\;\chi}^{\;\;\delta} + 2\;\partial^{\chi}\mathcal{A}^{a\beta}_{\;\;\alpha}\partial_{\delta}\mathcal{A}_{\beta\;\chi}^{\;\;\delta} + \partial_{\alpha}\mathcal{B}_{\alpha}^{\;\;\delta} + \partial_{\alpha}\mathcal{B}_{\alpha\beta}^{\;\;\delta} + \partial_{\alpha}\mathcal{B}_$	$+4 \partial^{\beta} \mathcal{B}^{\alpha} \partial_{\beta} \mathcal{A}_{\alpha\beta}^{\ \ x}$ $^{\alpha}_{\alpha} - \partial_{\lambda} \mathcal{A}_{\beta\beta}^{\ \ \delta} \partial^{\beta} \mathcal{A}^{\alpha\beta}$ $\mathcal{A}^{\alpha\beta}_{\alpha\beta} \partial_{\delta} \mathcal{A}_{\alpha\beta}^{\ \ \delta}) +$	$\delta_{\alpha} \mathcal{O}_{\lambda} \mathcal{A}_{\alpha \beta \delta} + \delta_{\delta} \mathcal{A}_{\alpha \beta \chi} - 2 \partial_{\delta} \mathcal{A}_{\alpha \chi} \stackrel{1}{\rho} \partial^{\delta} \mathcal{A}^{\alpha \beta \chi} - \delta_{\delta} \mathcal{A}_{\alpha \chi} \stackrel{1}{\rho} \partial^{\delta} \mathcal{A}^{\alpha \beta \chi} - \delta_{\delta} \mathcal{A}_{\alpha \chi} \stackrel{1}{\rho} \partial^{\delta} \mathcal{A}^{\alpha \beta \chi} + \delta_{\beta} \mathcal{A}_{\chi} \delta_{\alpha \delta} \partial^{\delta} \mathcal{A}^{\alpha \beta \chi} + \delta_{\delta} \mathcal{A}_{\chi} \delta_{\alpha \delta} \partial^{\delta} \mathcal{A}^{\alpha \beta \chi} + \delta_{\delta} \mathcal{A}_{\chi} \delta_{\alpha \delta} \partial^{\delta} \mathcal{A}^{\alpha \beta \chi} + \delta_{\delta} \mathcal{A}_{\alpha \chi} \delta^{\delta} \mathcal{A}^{\alpha \beta \chi} \delta^{\delta} \mathcal{A}^{\alpha \beta \chi} + \delta_{\delta} \mathcal{A}_{\alpha \chi} \delta^{\delta} \mathcal{A}^{\alpha \beta \chi} \delta^{\delta} \mathcal{A}^{\alpha \beta \chi} + \delta_{\delta} \mathcal{A}_{\alpha \chi} \delta^{\delta} \mathcal{A}^{\alpha \beta \chi} \delta^{\delta} \mathcal{A}^{\alpha \gamma \chi} \delta^{\delta} \mathcal{A}^{\alpha$	$0.74$ $i \sqrt{3}(12 \lambda_{e,v})$ $7 k(-12 \lambda^{2} + \lambda_{e,v} + 2 k^{2} \nu_{e} (r_{1} r_{3} + 2 r_{4}))$ $0 0$ $1 \frac{i}{7 \sqrt{2} k(\lambda_{e} + \frac{2^{2} \nu_{e} (r_{3} + 2 r_{4})}{-12 \lambda_{e} \nu_{e}})}$ $-12 \lambda_{e} + \nu_{e} + 24 k^{2} (r_{1} r_{3} + 2 r_{4})$ $2 k^{2} (-12 \lambda^{2} + \lambda_{e} + 2 k^{2} \nu_{e} (r_{1} r_{3} + 2 r_{4}))$ $0$ $0$	7		-2 A.				$^{\chi}\sigma^{eta lpha}_{\ eta})$		жав ==	
	(X) + (24	+4 2 +4	+ 2 2 6	$\begin{cases} a_{\chi\chi} \\ + \beta \\ + \alpha_{\chi\chi} \end{cases}$	$i \sqrt{3}(12 \ \lambda - \nu)$ $12\lambda^{2} + \lambda \cdot \nu + 2k^{2} \nu \cdot (\nu)$ $0$ $7 \sqrt{2} k(\lambda + \frac{2^{2} \nu \cdot \nu}{12 + \nu}, \frac{2^{2} \nu}{12 + \nu})$ $-12\lambda + \nu + 24k^{2} (\nu_{1}^{2}, \frac{2}{12})$ $0$ $0$	$f_{f}$ 0 0 0 0 0 0 0 0						$+\partial_{\delta}\partial^{\delta}\partial_{\chi}\partial^{\chi}\sigma^{\beta\alpha}$		$\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\chi}$ $^{\beta\delta}$ +2 $\partial_{\delta}\partial^{\delta}\partial_{\chi}\sigma^{\chilphaeta}$ 2 $\partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\chilpha\delta}$	
a d	$a_{\alpha} \partial_{x}$ $\partial_{\beta} f^{\alpha}$ $2 \partial_{\alpha}$ $3 \partial_{x} f$ $x_{\alpha} \partial^{\beta}$ $x_{\alpha} \partial^{\beta}$	$\begin{array}{l} ()+  \mathcal{A}_{\alpha\chi\beta} (\mathcal{A}^{\alpha\beta\chi}) \\ \beta g^{\alpha} + 4  \partial_{\beta} g_{\alpha} \partial^{\beta} g^{\beta} \\ \gamma^{\alpha\beta\chi}  \partial_{\delta} \mathcal{A}_{\beta\chi}^{\ \ \delta} + 2  \partial^{\chi} \end{array}$	2 20 8	$\mathcal{A}_{\chi  6a^{-}} \partial_{\lambda} \mathcal{A}_{abb} + \partial_{6} \mathcal{A}_{abk} - 2 \partial_{6} \mathcal{A}_{abk} - 2 \partial_{6} \mathcal{A}_{abk} - 2 \partial_{6} \mathcal{A}_{abk} - 2 \partial_{6} \mathcal{A}_{ab} \partial_{a} \partial_{b} \partial_{b}$	7 \(\sigma \frac{12 \lambda^2}{12 \lambda}\)	$0^{+}f\ $ $i k(12\lambda - v.)$ $2 \sqrt{3}$ $i k(12\lambda - v.)$	6 √2 k² v.	Q				# χ θ β	βα )	β6+2 ( σ <sup>χαδ</sup>	
	$f_{\alpha}^{x} + 2 \partial^{f} f_{\alpha}^{a} \partial_{x}$ $\int_{a}^{a} -4 \mathcal{A}_{\alpha}^{x} \partial_{x} f^{g} f^{g}$ $f_{\alpha}^{a} \partial_{x} \mathcal{A}^{g} f^{g} + 2 \partial_{x} f^{g}$ $\int_{a}^{a} \partial_{x} f^{g} f^{g} + 3 \partial_{x} f^{g}$ $\int_{a}^{g} \partial_{x} f^{g} f^{g} - \partial_{x} f^{g} f^{g}$ $\partial^{g} f_{\alpha}^{a} - \partial_{g} f^{x} \partial^{g}$ $\partial^{g} f_{\alpha}^{a} - \partial_{g} f^{x} \partial^{g}$	$\begin{array}{ll} (1+\mathcal{A}_{\alpha\chi\beta}) & (1+\mathcal{A}_{\alpha\chi\beta}) \\ (1+\mathcal{A}_{\beta}) & (1+\mathcal{A}_{\beta}) \\ (1+\mathcal{A}_{\beta}) & (1+\mathcal{A}_{\beta}) & (1+\mathcal{A}_{$	$\int_{a}^{x} \partial^{\beta} \mathcal{B}^{\alpha} + 4 \partial_{\beta} \mathcal{B}$ $\partial_{x} \mathcal{A}^{\beta \chi}_{\beta}) - \partial_{\beta} \mathcal{A}_{\chi}^{\delta}_{\beta}$ $- \partial_{\alpha} \mathcal{A}^{\alpha \beta \chi} \partial_{\delta} \mathcal{A}_{\chi}^{\delta}_{\beta}$	$(abc + \partial c \mathcal{H}_{abc} - \partial c \mathcal{H}_{abc}$	7 1 2 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4 5 4	0 (, ,	4	0 0				$\partial_{\sigma}\partial_{\chi}\partial_{\beta}\sigma^{\beta\alpha\chi} ==$ $\partial_{\sigma}\partial^{\sigma}\partial_{\chi}\partial^{\alpha}\sigma^{\beta}_{\beta}$	$+\partial_{\chi}\partial^{\chi}\sigma^{\beta\alpha}_{\beta})$	$\partial_{\delta}\partial_{\chi}\partial^{\alpha}\sigma^{\chi}^{\beta\delta}+$ $2\ \partial_{\delta}\partial_{\chi}\partial^{\beta}\sigma^{\chi\alpha^{\prime}}$	
αβΧ	$\begin{array}{l} \partial_{\beta}f^{\alpha\beta}\partial_{\chi}f_{\alpha}^{\ \ \chi} + \\ 2\partial_{\beta}\mathcal{A}^{\alpha\beta}{}_{\alpha}^{\ \ d} - \\ + 3\partial_{\chi}f_{\alpha\beta}\partial_{\chi} \\ + 3\partial_{\chi}f_{\alpha\beta}\partial_{\chi} \\ + \partial_{\chi}f_{\alpha\beta} - \partial_{\chi}f_{\alpha\beta} \\ - 2\mathcal{A}_{\beta}{}_{\chi}^{\ \ \chi}\partial^{\beta}f_{\alpha} \\ - 2\partial_{\sigma}f_{\chi}\beta^{\lambda}f_{\gamma}^{\ \ d} \end{array}$	\$ 0 B	* + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 + 0 × 0 ×	3, 3, 3, 3, 4, 4, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5, 5,	(r + +2 1 3 3 4 1 3 3 1 1 3 3 1 1 1 3 1 1 1 1 3 1	2 - 0	m					$\partial_{\lambda}\partial^{\lambda}\partial_{\beta}\Gamma^{\alpha\beta} + \partial_{\lambda}\partial^{\lambda}\partial_{\beta}\partial^{\alpha}\mathcal{T}^{\beta} + 2\partial_{\alpha}\partial^{\beta}\partial_{\lambda}\partial_{\beta}\partial^{\alpha}\partial_{\alpha}$ $= \partial_{\lambda}\partial_{\beta}\partial^{\alpha}\Gamma^{\beta\gamma} + \partial_{\lambda}\partial^{\lambda}\partial_{\beta}\partial^{\beta}\mathcal{T}^{\alpha} + 2(\partial_{\alpha}\partial^{\beta}\partial_{\lambda}\partial_{\alpha}\partial_{\alpha}\partial_{\alpha}\partial_{\alpha}\partial_{\alpha}\partial_{\alpha}\partial_{\alpha}\partial_{\alpha$			
		+ 3 g	-4 0g	$2 \partial_{\beta} \mathcal{A}_{X \delta \alpha} - \partial_{\lambda} \mathcal{A}_{A}$ ${}^{\beta} \mathcal{B}^{\alpha} + 2 \partial_{\alpha} \mathcal{B}_{\beta} \partial^{\beta}$ $(\partial^{\beta} \mathcal{B}^{\alpha} + 6 \partial_{\alpha} \mathcal{B}_{\beta})$	$ \frac{\sqrt{6} \text{ v.}}{49(-12  \lambda^2 + \lambda  v + 2  k^2  v \cdot (r, r^2)} $ $ \frac{\sqrt{6}  v.}{0} $ $ \frac{\sqrt{6}  v.}{\sqrt{6}(-12  \lambda^2 + \lambda  v + 2  k^2  v \cdot (r, r^2)} $ $ \frac{i}{1} $ $ \frac$	$ \begin{array}{c} 0^{+}\mathcal{A}^{1} \\ 12\lambda - v - 24k^{2}(r_{1} - r_{3} + v_{4} + v_{4} - r_{3} + v_{4} + v_{4$	1 i k(12 λ · ν.)	0 0 0				(J <sup>β</sup> +2 <sub>1</sub> θ <sup>β</sup> J <sup>α</sup> +	$= \partial_x \partial_\beta \tau^{\beta \alpha}$ $\partial_\alpha \partial^\beta \mathcal{J}^\alpha + 2(\partial_x \partial^\alpha \sigma^\beta)^x$	$\frac{\partial_{\chi}\partial^{\alpha}\tau^{\beta\chi} + \partial_{\chi}\partial^{\beta}\tau^{\chi\alpha} + \partial_{\chi}\partial^{\chi}\tau^{\alpha\beta} + 2}{\partial_{\chi}\partial^{\alpha}\tau^{\chi} + \partial_{\chi}\partial^{\beta}\tau^{\alpha\chi} + \partial_{\chi}\partial^{\chi}\tau^{\beta\alpha} + 2}$	
10	\$ 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(3)	8 0 8 0 8 0 0 8 0	$+2 \partial_{\mu}$ $\partial^{\beta} \mathcal{B}^{\alpha}$ $\partial^{\beta} \mathcal{B}^{\alpha}$ $\partial^{\beta} \mathcal{B}^{\alpha}$ $\partial^{\beta} \mathcal{B}^{\alpha}$ $\partial^{\beta} \mathcal{B}^{\alpha}$	12 x <sup>2</sup> +x v+ 12 x <sup>2</sup> +x v+ 7 \sqrt{2} k(x+	+	77				αβ α	, дх д <sub>в</sub> д <sup>а</sup> У , дх дх д <sub>в</sub> д <sup>в</sup>	$==\hat{q}_{\beta}\partial^{x}\partial_{\beta}\tau^{\beta\alpha}$ $=\hat{q}_{\beta}\partial^{\alpha}+2$	$^{3}r^{\chi\alpha} + ^{6}r^{\alpha\chi}$	
	$f^{\alpha\beta}$ $f^{\alpha\beta}$ -12 $+3 (4 + 3) (6 $	+ 9 - 2	+4 0a +8 a +8	8 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		$\phi_{+}$ 0 0 $\gamma$	•		form	0 == 8	$\partial_{\alpha} \mathcal{J}^{\alpha} == 2 \partial_{\beta} \sigma^{\alpha \beta}_{\alpha}$ $\rho == 0$	$t^{\alpha\beta} + \partial_{\alpha}$	$\Gamma^{\beta\chi} == \zeta$ $\beta == \beta \beta \beta$	$\partial^{\alpha} t^{\beta\chi} + \partial_{\chi} \partial^{\beta} t^{\chi\alpha} + \partial_{\chi} \partial^{\beta} t^{\alpha\chi} + \partial_{\chi} \partial^{\beta} t^{\alpha\chi}$	
g.	$\mathcal{A}_{\beta,\chi}^{\chi} \partial^{\beta} f_{\alpha}^{\alpha}$ $6\partial_{\alpha}\mathcal{B}^{\alpha} + 12$ $\partial_{\beta} f_{\chi} \partial^{\beta} f_{\alpha}^{\alpha}$ $\partial_{\alpha} f_{\chi} \partial^{\beta} f^{\alpha\beta}$ $\beta_{\beta\alpha} + 2 \partial_{\alpha} f_{\beta}^{\alpha}$ $\mathcal{A}_{\beta,\chi} - 2$ $\mathcal{A}_{\beta,\alpha} \partial^{\chi} f^{\alpha\beta}$	$_{\alpha}^{\partial x}f^{\alpha\beta}$ - $_{\alpha}^{\partial^{\beta}}\mathcal{B}^{\alpha}$ - $_{\alpha}^{\delta}$	4 36 84 84 4 4 4 3 8 8 4 4 4 4 3 8 8 4 8 8 8 8	$\partial_{eta}\mathcal{A}_{\alpha\chi}$ , $\dot{\epsilon}^{-2}$ , $\partial_{\mu\dot{\alpha}}$ , $\mathcal{B}^{a}$ , $\partial_{\mu}\mathcal{B}^{b}$ , $\partial_{\alpha}$ , $\partial_{\alpha}\mathcal{B}^{a}$ , $\partial_{\alpha}\mathcal{B}^{a}$ , $\partial_{\alpha}\mathcal{B}^{a}$ , $\partial_{\lambda}\mathcal{A}_{\alpha\dot{\beta}\dot{\beta}}$ , $\partial_{\lambda}\mathcal{A}_{\alpha\dot{\beta}\dot{\beta}\dot{\beta}}$ , $\partial_{\lambda}\mathcal{A}_{\alpha\dot{\beta}\dot{\beta}}$ , $\partial_{\lambda}\mathcal{A}_{\alpha\dot{\beta}\dot{\beta}}$ , $\partial_{\lambda}\mathcal{A}_{\alpha\dot{\beta}\dot{\beta}}$ , $\partial_{\lambda}\mathcal{A}_{\alpha\dot{\beta}\dot{\beta}}$ , $\partial_{\lambda}\mathcal{A}_{\alpha\dot{\beta}\dot{\beta}}$ , $\partial_{\lambda}\mathcal{A}_{\alpha\dot{\beta}\dot{\beta}}$ , $\partial_{\lambda$	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 7.)				$\partial_{\beta}\partial_{\alpha} t^{\alpha\beta}$	$\partial_{\alpha} \mathcal{J}^{\alpha} = \rho$	$\partial_{\chi}\partial^{\chi}\partial_{\beta}\Gamma^{\alpha l}$ $\partial_{\chi}\partial_{\beta}\partial^{\alpha}$	$\partial_{x}\partial_{\beta}\partial^{\alpha}T^{\beta\chi} = \partial_{x}\partial_{\beta}\partial^{\alpha}T^{\beta\chi}$	$\partial_{\chi}\partial^{\alpha}\tau^{\beta)}$	
Xdt	$2 \mathcal{A}_{\beta \chi}^{\chi}$ $36 \partial_{\alpha} \mathcal{B}^{\alpha}$ $2 \partial_{\beta} f_{\chi} \tilde{c}$ $3 \partial_{\alpha} f_{\chi} \tilde{p} \tilde{c}$ $((4 \mathcal{A}_{\beta \gamma \alpha} + 2 \mathcal{A}_{\beta \gamma \alpha} + 2 \mathcal{A}_{\beta \gamma \alpha})$ $2 \mathcal{A}_{\beta \gamma \alpha}$	$\frac{\partial_X f_{\beta\alpha}}{\int_S G_{\alpha} \mathcal{A}_{\beta,X}^{X}} G_S$	$r_{4} \left( -4 \partial_{\alpha} \mathcal{A}_{\beta X}^{X} \right)$ $4 \partial^{\beta} \mathcal{B}^{\alpha}$ $\partial_{\alpha} \mathcal{A}^{\alpha \beta X}$	$\frac{1}{3} \frac{1}{2} \frac{1}{2} (4 \partial_{\beta} \mathcal{A}_{QX} \delta^{-2} \delta^{-2}$	$ \begin{array}{c} 0^{+}\mathcal{J} \\ 6^{v} \\ 6^{v} \\ 0 \\ 0 \\ 0 \\ \sqrt{6}^{v} \\ 888^{\lambda^{2}} + 49^{v} (\lambda + 2k^{2}v, (\frac{r}{1-3} + 2r_{1})) \\ \frac{\sqrt{6}^{v}}{15^{3}} \\ \frac{i}{\sqrt{3}(12^{\lambda} - v)} \\ 84k \lambda^{2} - 7k v (\lambda + 2k^{2}(r_{1} - r_{1} + 2r_{1})) \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{array} $	-r. 3	3.1	0 0	Covariant			0 ==			
Xαb	$\begin{array}{c} \\ \\ \\ \\ \\ \end{array}$	5.	, <sub>4</sub>	3 4 4 7 3 3 2 7 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	$\begin{array}{c} 0^{+}\mathcal{J} \\ 6^{\circ} \\ 6^{\circ} \\ 0 \\ \sqrt{6^{\circ}} \\ \sqrt{3}(12^{\circ} \lambda \cdot \nu) \\ \sqrt{8}(\lambda + 2^{\circ} k^{\circ} (\iota_{1} + 2^{\circ} k^{\circ} ($	$ \begin{array}{c} 0^{+} \mathcal{B} \\ + \frac{v}{2} + 12  k^{2} \left( r_{-} \right) \\ 0 \\ 12 \lambda \cdot v_{-} 24 k^{2} \left( r_{-} r_{-} \right) \\ 0 \\ 12 \lambda \cdot v_{-} 24 k^{2} \left( r_{-} r_{-} \right) \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0$	2 √6 i k(12 λ - v.)	0 0 0	form			i k <sup>1</sup> J <sup>a</sup>	+ 1 J <sup>a</sup>	θ == 0	
11111					9° T 6 v. 49(.12 \lambda^2 + \lambda v + 2 \lambda^2 \lambda v \lambda v + 2 \lambda^2 \lambda \lamb	12 /					~ )	+ 1 t , a		$ ^{\alpha \beta} + 1^+ t^{\parallel \alpha \beta}$	
					14	0+8+ 61	+    +    0	+ 1 + 1 = 5 · · · · · · · · · · · · · · · · · ·	oin-pari	0, 1, == 0	$20^{+}\sigma^{\parallel} + 0^{+}$ $0^{+}\rho ==0$	2 i k 1 o 1 ° +	$1  r^{\parallel \alpha} == 0$ $2  1  \sigma^{\parallel \alpha} == 2$	i k1' σ <sup>ι αβ</sup>	
55	sive and massle	ess sp	ectra		$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$+8^{+0}$ $+4^{+0}$ $+8^{+0}$	) <sub>+0</sub>	, †0 0.	S.	+0	2 0 4	21	2	-	
		•		Polere Square Spin: Parity:	?	? ' ?		?							
	Pole residue:			Pole residue: Square mass: Spin: Spin:	$k^{\mu} = (p, 0, 0, p)$	_?	$J^P = 0$	<b>-</b> ⊗— ?							
			-		?	? **	$i^{\mu} = (\mathcal{E}, 0)$	, 0, p)							
4 5	$((3 (288 \lambda^{3} + v^{2} (7r_{1})^{2})^{2} + (7r_{1})^{2} + (7r_{1})^{2})^{2} + (7r_{1} + r_{1})^{2} + (7r_{1} + r$			Massive particle $(2r, t_1, t_2, t_1, t_2, t_2, t_1, t_2, t_3, t_4, t_4, t_7, t_7, t_7, t_7, t_7, t_7, t_7, t_7$	Massless partic	ile Ma	assive	particle							
	7 7			$\frac{+2r_1t_1^2q_1}{52}$ $\frac{(2r_1)^2}{(2r_2)^2}$ $\frac{\lambda_1q_2}{(2r_1+t_1)} > 0$	Pole residue: $\frac{1}{\lambda}$	- >0 Pole re	esidue	$\frac{1}{r_2} > 0$							
1	$v^{2}(T_{1}+T_{2})$ $12v.t_{2}^{2}+7$ $2\lambda.(v^{2}-72)$ $r_{1}+r_{2}(12\lambda.$ $84(r_{1}+r_{2})$ $84(r_{1}+r_{4})$ $r_{2}+r_{1}(r_{2})>0$			1, t, <sup>2</sup> +4 1, <sup>2</sup> 2, +r, )( 2, 3, 5)	Polarisations: 2	Square	emass	$: \frac{2\lambda \cdot t}{2} > 0$							
	+7 r 2 + 7 1 2 + 7 2 - 72 2 - 72 3 - 72 4 7 4 7 4 7 4 9	?	?	M;	.3	Spin:		0							
	+7 +7 2(r 2(r 1 1 1 1 1	<b>S</b>	/	Massive pai $\frac{2^2 \cdot 4_1 \cdot 2^2 + 4 \cdot \lambda^2 (6r_1 + 3r_2 + 4r_1)}{3 \cdot 3^2 \cdot 1^2 \cdot 2^2}$ $\frac{2^2 \cdot 4_1 \cdot 2^2 + 4 \cdot \lambda^2 (6r_1 + 3r_2 + 4r_1)}{3 \cdot 3^2 \cdot 2^2 \cdot 2^2}$ >0	$J^P = \underbrace{\bigotimes_{k^\mu = (\mathcal{E}, \cdot)}^{P}}_{}$	Parity:		Odd							
	5 1 5 1 + r + r ) t 2 + r + 2 r + 2 r 1 1 2 t ) (360 Å	$E = (\mathcal{E}, 0)$	$J^P = 1$	Massive particle 57; +37; +1; +1; +2.1. (112.1, 2+27; 1; +6.1.)	1+ 0,0,p)										
		G (0, p)		rticle )+2\lambda (2r_t^t +t_2^2) +6\lambda (t_1^2)+2\lambda (12)+2\lambda (12)+2\lamb											
	+432 / +432 / + +t.) 5 1 1 (2-30)		, , ,	1+t <sup>2</sup> +4 +2 <sub>r</sub> t-3 5 <sup>2</sup>											
	λ. <sup>2</sup> (3 <i>t</i> +12 ν λ. ν. +			3t 1 2 + 4)											
	$2 \lambda.^{2} (3r. + 3r. + $			+4r: (t;-2t;)-4r; (t;-4; 3 1 2 5 2 3) 2 31; 2 +4r; (t;+t;)											
	+3 r +7 r +7 r +7 r (+7 r ())))>0			1)											
	$+432 \lambda.^{2} (3r_{1} + 3r_{2} + 4r_{3} + t_{1}) - (3r_{1} + 3r_{2} + t_{2}) + (7r_{1} + 7r_{2} + 7r_{3} + t_{2}))))/(5r_{1} + 7r_{2} + 7r_{3} + 7r_{4} + 7r_{5} + 7r_{5} + 15r_{1})))/(5r_{1} + 7r_{4} + 7r_{5} + 15r_{1}))) > 0$			$\frac{+4r.\left(t;-2t.\right)-4r.t;-4;^{2}+2r.\left(t;^{2}+2t;^{2}\right)\right)}{\frac{2}{2}\cdot\frac{3}{1}\cdot\frac{1}{2}\cdot44r\frac{1}{3}\cdot\frac{1}{1}+2})}>0$											
	+ t .)))) 1 -15 t .			(2)) >0											
	+				Pole Squ Spi										

Poleresidue:

 $\frac{\lambda^2 + (2r_1 \cdot 2r_3 + r_4)t_1 + \lambda \cdot (4r_1 \cdot 4r_3 + 2r_4 + t_4)}{\lambda \cdot (2r_1 \cdot 2r_3 + r_4)(\lambda \cdot t_4)} > 0$ 

Massive particle

## **Unitarity conditions**

(Timeout after 10 seconds)

Poleresidue:  $\left| \frac{1}{14} \left( \frac{7}{\lambda_1} + \frac{84}{v_1} + \frac{1}{\sqrt{1^{4/3} + 27}} \right) > 0 \right|$ 

Even

Massive particle

Square mass:  $-\frac{2\lambda + t}{2\frac{1}{1}} > 0$ 

Pole residue:  $-\frac{1}{r_1} > 0$ Massive particle