بنابراین برای معادلات جت داریم:

$$g^{\mu v}{}_{jet} = \begin{pmatrix} \dfrac{z}{z-2m} & \cdot & \dfrac{z^3}{2ma} & \cdot \\[2mm] \cdot & -\dfrac{z}{z+2m} & \cdot & \cdot \\[2mm] \dfrac{z^3}{2ma} & \cdot & -\dfrac{z}{z+2m} & \cdot \\[2mm] \cdot & \cdot & \cdot & -\dfrac{z}{z+2m} \end{pmatrix}$$

ضرایب کریستوفل در جت به این ترتیب است $(1 = t \,,\, 2 = R \,,\, 3 = \varphi \,,\, 4 = z)$:

$$(1,1,2) = \frac{m(z + 2z^3 + z^5 + 2m - 2a^2m + 4mz^2 + 4a^2mz^2 + 2z^4m)}{z^2(1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6)}$$

$$(1,1,4) = \frac{mz(z + 2z^3 + z^5 + 2m - 6a^2m + 4mz^2 + 2z^4m)}{z^2(1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6)}$$

$$(1,2,1) = \frac{m(z + 2z^3 + z^5 + 2m - 2a^2m + 4mz^2 + 4a^2mz^2 + 2z^4m)}{z^2(1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6)}$$

$$(1,2,3) = -\frac{ma(2z^3 + z - 2z^3 + 4m)}{1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6}$$

$$(1,3,2) = -\frac{ma(2z^3 + z - 2z^3 + 4m)}{1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6}$$

$$(1,3,4) = -\frac{maz(3z + 4m)}{1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6}$$

$$(1,4,1) = \frac{mz(z + 2z^3 + z^5 + 2m - 6a^2m + 4mz^2 + 2z^4m)}{z^2(1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6)}$$

$$(1,4,3) = -\frac{maz(3z + 4m)}{1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6}$$

$$(2,1,1) = \frac{m}{z^2(z + 2m)}$$

$$(2,1,3) = \frac{2ma}{z^2(z + 2m)}$$

$$(2,2,2) = -\frac{m}{z^2(z + 2m)}$$

$$(2,2,4) = -\frac{m}{z(z + 2m)}$$

$$(2,3,1) = -\frac{-2ma}{z^2(z + 2m)}$$

$$(2,3,3) = -\frac{(z^3 + m + 2mz^2)}{z^2(z + 2m)}$$

$$(2,4,2) = -\frac{m}{z(z + 2m)}$$

$$(2,4,4) = \frac{m}{z^2(z + 2m)}$$

$$(3,1,2) = \frac{am(z - 2z^3 + 4mz^2)}{(1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6)}$$

$$(3,1,4) = \frac{amz(-4m + 3z)}{1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6}$$

$$(3,2,1) = \frac{am(z - 2z^3 + 4mz^2)}{1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6}$$

$$(3,2,3) = -(2mz^3 + 4z^5m + 2z^7m - mz - 4z^3m - 5z^5m - 2z^7m - 1 + 2m^2 - 4z^2$$
$$+ 2a^2m^2 + 8m^2z^2 - 6z^4 - 4a^2m^2z^2 + 10m^2z^4 - 4z^6 + 4m^2z^6$$
$$- z^8)$$
$$/((1 + z^2)(1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6))$$

$$(3,3,2) = -(2mz^3 + 4z^5m + 2z^7m - mz - 4z^3m - 5z^5m - 2z^7m - 1 + 2m^2 - 4z^2$$
$$+ 2a^2m^2 + 8m^2z^2 - 6z^4 - 4a^2m^2z^2 + 10m^2z^4 - 4z^6 + 4m^2z^6$$
$$- z^8)$$
$$/((1 + z^2)(1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6))$$

$$(3,3,4) = -\frac{mz(z + 2z^3 + z^5 - 2m + 6a^2m - 4mz^2 - 2mz^4)}{(1 + z^2)(1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6)}$$

$$(3,4,1) = \frac{amz(-4m + 3z)}{1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6}$$

$$(3,4,2) = \cdot$$

$$(3,4,3) = -\frac{mz(z + 2z^3 + z^5 - 2m + 6a^2m - 4mz^2 - 2mz^4)}{(1 + z^2)(1 - 4m^2 + 3z^2 + 4a^2m^2 - 8m^2z^2 + 3z^4 - 4m^2z^4 + z^6)}$$

$$(4,1,1) = \frac{mz}{(1 + z^2)(z + 2m)}$$

$$(4,1,3) = -\frac{3maz}{(1 + z^2)^2(z + 2m)}$$

$$(4,2,2) = \frac{mz}{(1 + z^2)(z + 2m)}$$

$$(4,2,4) = -\frac{mR}{(1 + z^2)(z + 2m)}$$

$$(4,3,1) = -\frac{3maR^2z}{(1 + z^2)^2(z + 2m)}$$

$$(\xi,\Upsilon,\Upsilon) \;=\; \frac{mz}{(\Lambda + z^{\Upsilon})^{\Upsilon}(z + \Upsilon m)}$$

$$(\xi,\xi,\Upsilon) \;=\; -\frac{m}{(\Lambda + z^{\Upsilon})(z + \Upsilon m)}$$

$$(\xi,\xi,\xi) \;=\; -\frac{mz}{(\Lambda + z^{\Upsilon})(\sqrt{z} + \Upsilon m)}$$

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a.

$$g^{zz}\frac{\partial P}{\partial z} - (\rho + P)(u^{\cdot})^{\Upsilon}\left[\frac{\partial V^{z}}{\partial z}V^{z}\right]$$
$$= (\rho + P)(u^{\cdot})^{\Upsilon}\left[\Gamma_{tt}^{z} + \Upsilon V^{\varphi}\Gamma_{t\varphi}^{z} - \Upsilon V^{z}V^{z}\Gamma_{tz}^{t} + V^{\varphi}V^{\varphi}\Gamma_{\varphi\varphi}^{z} - V^{\varphi}V^{z}V^{z}\Gamma_{z\varphi}^{t}\right.$$
$$\left. - V^{z}V^{\varphi}V^{z}\Gamma_{\varphi z}^{t} + V^{z}V^{z}\Gamma_{zz}^{z}\right] + \left(\frac{z}{z + \Upsilon m}B_{\varphi} - V^{z}\frac{z^{\Upsilon}}{\Upsilon ma}B_{z}\right)J^{R}$$

b.

$$-(\rho + P)\left[\left(\frac{\partial V^{z}}{\partial z}\right)\right] - V^{z}\frac{\partial}{\partial z}(\rho - P) + \left[\frac{\Lambda}{\xi\pi}\left[B_{\varphi}(z)\frac{\partial}{\partial z}\left(\frac{z^{\Upsilon}}{(z+\Upsilon m)^{\Upsilon}}\right) + \frac{z^{\Upsilon}}{(z+\Upsilon m)^{\Upsilon}}\frac{\partial B_{\varphi}(z)}{\partial z}\right]\right]\left\{\frac{\Upsilon}{u^{\cdot}}\left(B_{\varphi}u^{z} - \right.\right.$$
$$B_{z}u^{\varphi}) + \frac{z^{\Upsilon}}{\Upsilon ma(u^{\cdot})^{\Upsilon}}B_{z}\right\} = +(\rho + P)\left[-\left\{\Gamma_{\varphi z}^{\cdot}V^{z}V^{\varphi} + \Gamma_{z\varphi}^{\cdot}V^{\varphi}V^{z}\right\}\right] -$$
$$\frac{\Upsilon}{u^{\cdot}}u^{R}\left(B_{z}\left[\frac{\Lambda}{\xi\pi}\left[\Gamma_{tR}^{\varphi}\left(\frac{z^{\xi}}{\Upsilon ma(z+\Upsilon m)}\right)B_{z} + (\Gamma_{tR}^{t} + \Gamma_{RR}^{R} + \Gamma_{R\varphi}^{\varphi} + \Gamma_{zR}^{z})\left(\frac{z^{\Upsilon}}{(z+\Upsilon m)^{\Upsilon}}\right)B_{z}\right]\right] - B_{\varphi}\left[\frac{-\Lambda}{\xi\pi}\left(\Gamma_{tR}^{t} + \right.\right.$$
$$\left.\left.\Gamma_{\varphi R}^{\varphi} + \Gamma_{Rz}^{z} + \Gamma_{RR}^{R}\right)\left(\frac{z^{\Upsilon}}{(z+\Upsilon m)^{\Upsilon}}\right)B_{\varphi}\right]\right)$$

c.

$$\left[\frac{١}{٤\pi}\left[B_\varphi(z)\frac{\partial}{\partial z}\left(\frac{z^٢}{(z+٢m)^٢}\right)+\frac{z^٢}{(z+٢m)^٢}\frac{\partial B_\varphi(z)}{\partial z}\right]\right]\left(V^\varphi\frac{z^٣}{٢ma}+\frac{z}{z+٢m}\right)B_z$$

$$-(\rho+P)(u^\cdot)^٢\left[\frac{\partial V^\varphi}{\partial z}V^z\right]$$

$$=(\rho+P)(u^\cdot)^٢\left[+٢V^z(\Gamma^\varphi_{tz}-\Gamma^t_{tz}V^\varphi)+V^\varphi V^z(\Gamma^\varphi_{z\varphi}-\Gamma^t_{z\varphi}V^\varphi)\right.$$
$$\left.+V^zV^\varphi(\Gamma^\varphi_{\varphi z}-\Gamma^t_{\varphi z}V^\varphi)\right]$$

$$-\left[\frac{١}{٤\pi}\left[(\Gamma^\varphi_{\varphi z}+\Gamma^R_{zR}+\Gamma^z_{zz}+\Gamma^t_{tz})\frac{z^٢}{(z+٢m)^٢}B_\varphi\right]\right]\left(V^\varphi\frac{z^٣}{٢ma}+\frac{z}{z+٢m}\right)B_z$$

$$+\left[\frac{z}{z+٢m}-\frac{z^٣}{٢ma}+(u^\varphi+u^z)u^\varphi\right]\{-(٢\Gamma^\varphi_{\varphi R}+\Gamma^R_{zR})(-\alpha p)\}$$

d.

$$g^{zz}\frac{\partial P}{\partial z}-(\rho+P)(u^\cdot)^٢\left[\frac{\partial V^z}{\partial z}V^z\right]$$

$$+\left[\frac{١}{٤\pi}\left[B_\varphi(z)\frac{\partial}{\partial z}\left(\frac{z^٢}{(z+٢m)^٢}\right)+\frac{z^٢}{(z+٢m)^٢}\frac{\partial B_\varphi(z)}{\partial z}\right]\right]\left(\frac{z}{z+٢m}B_\varphi-V^z\frac{z^٣}{٢ma}B_z\right)$$

$$=(\rho+P)(u^\cdot)^٢\left[\Gamma^z_{tt}+٢V^\varphi\Gamma^z_{t\varphi}-٢V^zV^z\Gamma^t_{tz}+V^\varphi V^\varphi\Gamma^z_{\varphi\varphi}-V^\varphi V^zV^z\Gamma^t_{z\varphi}\right.$$
$$\left.-V^zV^\varphi V^z\Gamma^t_{\varphi z}+V^zV^z\Gamma^z_{zz}\right]$$

$$+\left[\frac{١}{٤\pi}\left[(\Gamma^\varphi_{\varphi z}+\Gamma^R_{zR}+\Gamma^z_{zz}+\Gamma^t_{tz})\frac{z^٢}{(z+٢m)^٢}B_\varphi\right]\right]\left(\frac{z}{z+٢m}B_\varphi-V^z\frac{z^٣}{٢ma}B_z\right)$$