two photons meeting at 90° angle:

$\boxed{x^\mu}$

$x^0 = x.$
$x^1 = y.$
$x^2 = z.$
$x^3 = t.$

$\boxed{g_{\mu\nu}}$

$g_{00} = 1 + a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}) + b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}).$
$g_{01} = 0.$
$g_{02} = -a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}).$
$g_{03} = -b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}).$
$g_{10} = 0.$
$g_{11} = -1.$
$g_{12} = 0.$
$g_{13} = 0.$
$g_{20} = -a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}).$
$g_{21} = 0.$
$g_{22} = -1 + a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}).$
$g_{23} = 0.$
$g_{30} = -b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}).$
$g_{31} = 0.$
$g_{32} = 0.$
$g_{33} = -1 + b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}).$

$\boxed{\sqrt{} = \sqrt{-\det(g_{\mu\nu})}}$

$\sqrt{} = \sqrt{1 - a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$

$\boxed{g^{\mu\nu}}$

$g^{00} = -\frac{(-1+b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}))}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$
$g^{01} = 0.$
$g^{02} = -\frac{(-1+b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$
$g^{03} = -\frac{b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}))}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$
$g^{10} = 0.$
$g^{11} = -1.$
$g^{12} = 0.$
$g^{13} = 0.$
$g^{20} = -\frac{(-1+b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$
$g^{21} = 0.$
$g^{22} = -\frac{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$
$g^{23} = -\frac{a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$
$g^{30} = -\frac{b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}))}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$
$g^{31} = 0.$
$g^{32} = -\frac{a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$
$g^{33} = -\frac{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$

$\boxed{\Gamma^\sigma_{\mu\nu}}$

$\Gamma^0_{00} = -\frac{1}{4}\frac{\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2} - \sqrt{y^2+x^2}a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2} + 2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})xb(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2} - 2\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})x\sqrt{y^2+x^2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - 2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2} + 2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})x\sqrt{z^2+x^2} - 2\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})x\sqrt{y^2+x^2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}}{\sqrt{y^2+x^2}\sqrt{z^2+x^2}(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))}.$

$\Gamma^0_{01} = \frac{1}{4}\frac{\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2} - 2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})y - \sqrt{y^2+x^2}a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + 2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})ya(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))}.$

$\Gamma^0_{02} = \frac{1}{4}\frac{2z\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2} - a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2} - 2z\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + 2z\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}) + \sqrt{2}z\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{y^2+x^2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - \sqrt{2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{z^2+x^2}b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + \sqrt{2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{y^2+x^2}b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{z^2+x^2}(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))}.$

$\Gamma^0_{03} = -\frac{1}{4}\frac{2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - \sqrt{y^2+x^2}\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + \sqrt{y^2+x^2}a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2} - \sqrt{y^2+x^2}a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - 2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})xb(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + \sqrt{y^2+x^2}\sqrt{2}b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))}.$

$\Gamma^0_{10} = \frac{1}{4}\frac{\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2} - 2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})y - \sqrt{y^2+x^2}a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + 2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})ya(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))}.$

$\Gamma^0_{11} = 0.$

$\Gamma^0_{12} = \frac{1}{4}\frac{a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$

$\Gamma^0_{13} = \frac{1}{2}\frac{\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})y - \dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})ya(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))}.$

$\Gamma^0_{20} = \frac{1}{4}\frac{2z\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2} - a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2} - 2z\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + 2z\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}) + \sqrt{2}z\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{y^2+x^2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - \sqrt{2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{z^2+x^2}b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + \sqrt{2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{y^2+x^2}b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{z^2+x^2}(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))}.$

$\Gamma^0_{21} = \frac{1}{4}\frac{a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$

$\Gamma^0_{22} = -\frac{1}{4}\frac{4z\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2} - a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2} - 2\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + 2\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}) - 4z\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}) - 2\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})x + 2z\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}) + 2\dot{a}(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})xb(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})\sqrt{y^2+x^2} - \sqrt{2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{y^2+x^2}b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{z^2+x^2}(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))}.$

$\Gamma^0_{23} = \frac{1}{4}\frac{\sqrt{2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - \sqrt{2}b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$

$\Gamma^0_{30} = -\frac{1}{4}\frac{2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - \sqrt{y^2+x^2}\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + \sqrt{y^2+x^2}a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2} - \sqrt{y^2+x^2}a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - 2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})xb(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + \sqrt{y^2+x^2}\sqrt{2}b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))}.$

$\Gamma^0_{31} = \frac{1}{2}\frac{\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})y - \dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})ya(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))}.$

$\Gamma^0_{32} = \frac{1}{4}\frac{\sqrt{2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - \sqrt{2}b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + a'(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}}{-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})}.$

$\Gamma^0_{33} = -\frac{1}{4}\frac{2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2}) - 2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + \sqrt{y^2+x^2}\sqrt{2}b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + \sqrt{y^2+x^2}\sqrt{2}a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) + 2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})xb(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - 2\sqrt{y^2+x^2}\sqrt{2}b'(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}) - 2\dot{b}(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2})x}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2}, -\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2}, -\frac{1}{2}(z-t)\sqrt{2}))}.$

$$\Gamma^1_{00} = -\frac{1}{4}\frac{\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}-2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})y}{\sqrt{y^2+x^2}}.$$

$$\Gamma^1_{01} = 0.$$

$$\Gamma^1_{02} = \frac{1}{4}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}.$$

$$\Gamma^1_{03} = -\frac{1}{2}\frac{\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})y}{\sqrt{y^2+x^2}}.$$

$$\Gamma^1_{10} = 0.$$

$$\Gamma^1_{11} = 0.$$

$$\Gamma^1_{12} = 0.$$

$$\Gamma^1_{13} = 0.$$

$$\Gamma^1_{20} = \frac{1}{4}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}.$$

$$\Gamma^1_{21} = 0.$$

$$\Gamma^1_{22} = -\frac{1}{4}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}.$$

$$\Gamma^1_{23} = 0.$$

$$\Gamma^1_{30} = -\frac{1}{2}\frac{\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})y}{\sqrt{y^2+x^2}}.$$

$$\Gamma^1_{31} = 0.$$

$$\Gamma^1_{32} = 0.$$

$$\Gamma^1_{33} = \frac{1}{2}\frac{\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})y}{\sqrt{y^2+x^2}}.$$

$$\Gamma^2_{00} = \frac{1}{4}\frac{\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}+2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})x\sqrt{y^2+x^2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}-2z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{y^2+x^2}+\sqrt{y^2+x^2}\sqrt{2}\sqrt{z^2+x^2}b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})x\sqrt{y^2+x^2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})-4\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})x\sqrt{y^2+x^2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})}{\sqrt{y^2+x^2}\sqrt{z^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}$$

$$\Gamma^2_{01} = \frac{1}{4}\frac{\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}+2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})ya(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^2_{02} = -\frac{1}{4}\frac{a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}+2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})+\sqrt{2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{z^2+x^2}b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})x-2z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})+2z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{z^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^2_{03} = -\frac{1}{4}\frac{2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}+\sqrt{y^2+x^2}\sqrt{2}b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^2_{10} = \frac{1}{4}\frac{\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}+2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})ya(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^2_{11} = 0.$$

$$\Gamma^2_{12} = -\frac{1}{4}\frac{a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}}{-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}.$$

$$\Gamma^2_{13} = -\frac{1}{2}\frac{\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})ya(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^2_{20} = -\frac{1}{4}\frac{a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}+2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})+\sqrt{2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{z^2+x^2}b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})x-2z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})+2z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{z^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^2_{21} = -\frac{1}{4}\frac{a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}}{-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}.$$

$$\Gamma^2_{22} = \frac{1}{4}\frac{a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}+2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})+2z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})-2z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{z^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^2_{23} = \frac{1}{4}\frac{\sqrt{2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}}{-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}.$$

$$\Gamma^2_{30} = -\frac{1}{4}\frac{2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}+\sqrt{y^2+x^2}\sqrt{2}b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^2_{31} = -\frac{1}{2}\frac{\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})ya(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^2_{32} = \frac{1}{4}\frac{\sqrt{2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}}{-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}.$$

$$\Gamma^2_{33} = -\frac{1}{4}\frac{2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}+\sqrt{y^2+x^2}\sqrt{2}b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^3_{00} = -\frac{1}{4}\frac{\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}-\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}+2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})xb(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}-2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})x\sqrt{y^2+x^2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{z^2+x^2}+\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}\sqrt{z^2+x^2}+4\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})x\sqrt{z^2+x^2}}{\sqrt{y^2+x^2}\sqrt{z^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}$$

$$\Gamma^3_{01} = -\frac{1}{4}\frac{2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})y+\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^3_{02} = \frac{1}{4}\frac{2z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}-a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}-2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}\sqrt{z^2+x^2}+\sqrt{2}\sqrt{z^2+x^2}b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{z^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}$$

$$\Gamma^3_{03} = -\frac{1}{4}\frac{2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})xb(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})x}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^3_{10} = -\frac{1}{4}\frac{2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})y+\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^3_{11} = 0.$$

$$\Gamma^3_{12} = \frac{1}{4}\frac{a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}.$$

$$\Gamma^3_{13} = \frac{1}{2}\frac{\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})y}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^3_{20} = \frac{1}{4}\frac{2z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}-a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}-2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}\sqrt{z^2+x^2}+\sqrt{2}\sqrt{z^2+x^2}b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{z^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^3_{21} = \frac{1}{4}\frac{a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}.$$

$$\Gamma^3_{22} = -\frac{1}{4}\frac{4z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}-a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})\sqrt{z^2+x^2}-2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}\sqrt{z^2+x^2}+2\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})xb(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2z\dot{a}(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{z^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^3_{23} = -\frac{1}{4}\frac{\sqrt{2}b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}.$$

$$\Gamma^3_{30} = -\frac{1}{4}\frac{2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-\sqrt{y^2+x^2}\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-\sqrt{y^2+x^2}a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})xb(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})x}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^3_{31} = \frac{1}{2}\frac{\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})y}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$

$$\Gamma^3_{32} = -\frac{1}{4}\frac{\sqrt{2}b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+a'(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}.$$

$$\Gamma^3_{33} = \frac{1}{4}\frac{2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})xa(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-\sqrt{y^2+x^2}\sqrt{2}b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})-2\dot{b}(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})xb(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})+\sqrt{y^2+x^2}\sqrt{2}b'(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2})}{\sqrt{y^2+x^2}(-1+a(\sqrt{z^2+x^2},-\frac{1}{2}(y-t)\sqrt{2})b(\sqrt{y^2+x^2},-\frac{1}{2}(z-t)\sqrt{2}))}.$$