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Generalized Vaidya horizons and conformal symmetries

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The usual Vaidya spacetime may be extended to include both null dust and null string fluids leading to the generalised Vaidya spacetime. Nowadays, this metric is widely used to describe the gravitational collapse, a radiating star with a generalised Vaidya atmosphere, black holes in dynamical cosmology backgrounds. In our work we consider horizon structure of this spacetime. We have calculated the conformal Killing vector in order to specify the mass function $M(v, r) = \lambda v + \mu v^{2\alpha} r^{1-2\alpha}$, where α is from the equation of the state $p = \alpha\rho$. We impose the energy conditions to obtain conditions for λ , μ and α . Also we calculate the apparent horizon, the putative horizon, the event horizon. We find the the coordinate transformation to the static coordinates. The properties of generalized Vaidya spacetime in static coordinates is investigated. We consider particular models when $\alpha = 0$ - the dust case, $\alpha = \frac{1}{3}$ - the electro-magnetic field, $\alpha = -1$ - De Sitter solution and $\alpha = 1$ - the stiff fluid.

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