

# The Penrose-Papapetrou equation on the space-time of the Schwarzschild black hole

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## Abstract

We derive a new and exact formula for the Penrose-Papapetrou equation on the space-time of the Schwarzschild black hole by integrating out the non-perturbative corrections. This is done by taking the Finite Element of the angle of the black hole and evaluating the Penrose-Papapetrou equation. We find exactly the same formula as has been shown by Milner-Fisher, but for the black hole radius, which we find to be precisely the same as the one derived by Milner-Fisher.