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Using equations and tables made by the physicist Chandrasekhar, our team built a code to potentially calculate the properties of black holes using the polarization of light bent around the black hole. Chandrasekhar's equations, however, leave out some key variables that may have a measurable impact on the outputs. Because of this, I looked at the derivations of equations and tables found in *Radiative Transfer*, in order to understand how Chandrasekhar formulated his calculations and then included some of the variables, notably partial Rayleigh scattering, into the equations to make them more accurate for our intended use.

The first step in this process was understanding Chandrasekhar's results, so I began by recreating them through dissecting his equations and using them to recreate notable tables. The results of this were inconclusive as I was unable to find the base to use interpolation to calculate the H-function: an important part of later calculations. The contents of this essay, however, include the means by which other variables are defined and the iterative process necessary to calculate the H-function. Unfortunately, because of time restraints, I did not make it to the next step: altering the equations themselves.

This is important in calculating the properties of black holes of which there are three: mass, spin, and charge. Because the properties are interdependent, one of the properties must be known to calculate the others. The problem, however, lies in that black holes are not directly observed; we must calculate one of the properties based on something that interacts with it. Using the polarization of photons would make the mass of the black hole readily known and from this we could calculate the others.