PHYS 304 HW 0

Sophia Lanava*
Bryn Mawr College
(Dated: January 26, 2023)

1. EQUATION

My favorite equation is the Drake Equation.

$$N = R_* \cdot f_P \cdot n_e \cdot f_l \cdot f_i \cdot f_c \cdot L \tag{1}$$

2. EXPLANATION

The Drake Equation is less of an equation than it is a probabilistic argument. It was proposed by Dr. Frank Drake at the Green Bank Observatory as a way to estimate the number of intelligent, communicative extraterrestrial societies present in the Milky Way. The equation is not thought of as having an absolute value, but rather it serves as a summary of all of the factors astronomers must consider when exploring the idea of intelligent extraterrestrial life. The factors considered are; the average rate of star formation in the Milky Way (R_*), the fraction of those stars that have planets (f_P), the number of those planets that can potentially support life (n_e), the fraction of those habitable planets that actually develop life (f_l), the fraction of those planets that develop intelligent civilizations (f_i), the fraction of those civilizations that develop the technology necessary to make themselves known (f_c), and the length of time those civilizations spend releasing detectable signals (L).