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The Rotation Curve of the Milky Way Galaxy as Evidence for Dark Matter[1] REBEKAH POLEN , HUMA JAFREE, Randolph-Macon College — We present neutral hydrogen (HI) observations of the Galactic plane taken between $0° < l < 80°$ galactic longitude on the 20-Meter Telescope at the Green Bank Observatory. These radio spectroscopic signatures returned the 21-centimeter line of HI at various offsets due to the Doppler Shift. Calculating an orbital speed relative to the Galactic center, velocity was plotted against radius to map the rotation curve of the Milky Way Galaxy. Classical mechanics suggests that velocity should fall off at large distances, but empirical observations show otherwise. An abundance of mass which cannot be detected is responsible for this phenomenon, known as dark matter. Although undefined, dark matter is easily indirectly observed by galactic rotation curves. Our observations confirm that the velocity of the Milky Way's disc is fairly constant even at large distances from Sagittarius A*.

[1]Green Bank Observatory's Education and Public Outreach Program

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