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TITLE: Study of planetary nebulae with GALEX and corollary optical surveys

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ABSTRACT:

Planetary nebulae (PNe) consist of an ionized envelope surrounding a hot central star (CSPN). Ultraviolet observations provide important information on both the CSPN and the nebula. We have matched the catalog of all confirmed and possible PNe (PNcat) with the Galaxy Evolution Explorer (GALEX) UV sky surveys, the Sloan Digital Sky Survey (SDSS) data release 16 (DR16), and the Panoramic Survey Telescope and Rapid Response System (Pan-STARRS) PS1 second release. A total of 671 PNe were observed by GALEX in far-UV (FUV; 1344-1786Å) and/or near-UV (NUV; 1771-2831Å) (GUVPNcat); 83 PNe were observed by SDSS (PNcatxSDSSDR16) and 1819 by Pan-STARRS (PNcatxPS1MDS). We merged these matched catalogs into GUVPNcatxSDSSDR16xPS1MDS, which contains a total of 375 PNe with UV and optical photometry over a total spectral coverage of about 1540-9610Å. The multiband photometry was used to distinguish between compact and extended PNe and CSPNe (binary CSPNe) by color-color diagram analysis.