

Search and Preliminary Analysis of New Galactic PNe

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In general, the methods for searching new PNe exploit one of their characteristics and typically introduce a bias in the sample extracted. It is therefore important to perform PN searches based on different selection criteria. Some years ago we started a new search for PN candidates on the plates of the Palomar Near Infrared Photographic Survey of the Galactic Plane. The selection criterion is based on the consideration that PNe have $I(R) > I(NIR)$ up to $A_V \sim 10$, whereas normal field stars have $I(R) < I(NIR)$. First the plates are examined directly using a binocular, with a medium magnification, searching for faint diffuse nebulosity. Hereafter the comparison between R and NIR images is used both to detect new compact PN candidate and to discard, among diffuse objects, reflection nebulae. Spectra and imaging of the new objects were obtained in dedicated program both at the ESO and Asiago Observatories. From a preliminary analysis of the data for the new PNe it appears that the sample contains objects with very different characteristics. They have different morphologies and spectral features, but in general only few of the new PNe have an IRAS counterpart and these show a small flux in the IR. In particular, in the IRAS color-color plot they do not seem confined to the area of the bona-fide PNe; this still preliminary evidence may indicate that our selection criteria is pointing to PNe which remain undiscovered using other methods.

The list of the new PNe discovered so far is given in the table where we report the name of the objects, their PN Glll.l±bb.b identification (Acker et al., 1992, Strasbourg–ESO Catalogue of Galactic PNe, ESO Munich, Germany) and their equatorial coordinates.

Name	PNG	α (J2000.0)	δ	Name	PNG	α (J2000.0)	δ
Sab38 ^b	000.7−06.1	18 12 14.1	−31 19 59 ^α	NeVe4 ^b	169.8+01.9	05 27 11	+38 31 30
Sab37	000.6−05.3	18 08 35.1	−31 06 53 ^α	Sab13 ^{†r}	212.6−00.0	06 50 42.0	+00 14 26
Sab24	001.4+06.3	17 24 53.4	−24 19 29 ^α	NeVe14	250.4−01.3	08 03 12.7	−33 30 30
Sab44	001.6−00.5	17 51 52.9	−27 47 42	NeVe15	251.1+00.7	08 13 20.6	−33 01 07
Sab25	002.0+06.6	17 25 41.6	−23 38 29 ^α	NeVe22	275.9−01.0	09 34 04.6	−53 12 24
Sab59	002.2−01.2	17 55 45.7	−27 39 35 ^α	NeVe24	280.5+01.7	10 10 34.4	−53 56 31
Sab27 ^b	002.4+01.1	17 46 52	−26 13 04	NeVe26 ^{†r}	288.0−01.6	10 44 38.0	−60 47 47
Sab30 ^b	004.1+07.8	17 26 11	−21 17 34	NeVe33	298.4+02.4	12 15 30.9	−60 08 41
Sab15 ^b	006.8+05.0	17 42 24	−20 26 23	Sab81	340.9+03.7	16 34 50	−42 03 45
Sab31	008.8+03.8	17 51 08.3	−19 25 45 ^α	Sab82	341.7+02.6	16 42 11	−42 14 41
Sab12	009.8−01.1	18 11 39	−21 01 16	Sab70	345.4−02.3	17 15 46.9	−42 24 05 ^α
Sab16	009.9+04.5	17 50 46.9	−18 03 30 ^α	Sab74	347.4+01.8	17 04 16.7	−38 19 55 ^α
Sab88 ^{†r}	010.0−01.4	18 13 29.3	−20 57 08	Sab83	348.9+04.6	16 57 59	−35 24 35
Sab21 ^{†r}	010.1+07.4	17 41 04	−16 24 29 ^α	Sab61/2 ^b	351.1−03.9	17 39 17	−38 29 51
Sab17 ^{†r}	010.2+02.7	17 58 14	−18 42 14	Sab42 ^{b,†r}	351.4−03.3	17 37 28.6	−37 59 19 ^α
Sab32 ^b	010.2+00.3	18 06 53	−19 55 36	Sab66 ^b	353.4−04.5	17 48 00.7	−36 50 06 ^α
Sab34 ^{†r}	011.0−02.9	18 20 52	−20 47 35	Sab67 ^b	354.4+05.4	17 10 43.1	−30 32 26 ^α
Sab86 ^b	011.2−02.7	18 20 31	−20 30 37	Sab50	354.4+03.2	17 19 01.8	−31 47 36 ^α
Sab39 ^{†r}	011.7+00.2	18 10 19	−18 39 21	Sab63 ^{†r}	354.5−01.7	17 38 54.3	−34 27 36 ^α
Sab11 ^{†r}	011.7−04.9	18 30 08.5	−21 04 55	Sab41	354.5−03.9	17 48 16.1	−35 38 35 ^α
Sab33	012.1−02.1	18 20 17.3	−19 26 38	NeVe18 ^b	355.1−15.9	18 43 57	−40 29 56
Sab10	012.5+04.3	17 57 12.9	−15 56 18	Sab64	355.6−02.3	17 44 27.2	−33 55 01 ^α
Sab7 ^{†r}	019.2−04.4	18 42 25.5	−14 15 02	Sab40	356.4−02.5	17 47 12.2	−33 16 25 ^α
Sab8	024.8−01.4	18 41 48	−07 51 04	Sab49 ^{†r}	356.5+02.2	17 28 06.7	−30 38 18 ^α
Sab6 ^{†r}	026.2−03.4	18 51 32.5	−07 32 22	Sab43	357.5−02.4	17 49 35.9	−32 16 52
NeVe12 ^b	073.0+03.6	20 00 19	+36 59 19	Sab47 ^{b,†r}	357.8+01.6	17 33 59	−29 55 00
NeVe13 ^b	079.7+00.4	20 33 13	+40 41 18	Sab35	358.6−02.4	17 51 59.5	−31 18 42
Salv1 ^{†r}	139.3+04.8	03 23 01.3	+62 46 41	Sab36 ^{†r}	358.7−03.0	17 54 41.1	−31 31 45 ^α

(^α) Estimated errors on the coordinates of 2'', the others PNe have errors of 20'' ;
 (^b) Reduction of the observations is in progress; (^{†r}) Object with IRAS counterpart