J/MNRAS/459/3130 Lists of arm and interarm supernovae (Aramyan+, 2016)

Supernovae and their host galaxies.
IV. The distribution of supernovae relative to spiral arms.
Aramyan L.S., Hakobyan A.A., Petrosian A.R., de Lapparent V., Bertin E.,
Mamon G.A., Kunth D., Nazaryan T.A., Adibekyan V., Turatto M.
<Mon. Not. R. Astron. Soc. 459, 3130 (2016)>
=2016MNRAS.459.3130A (SIMBAD/NED BibCode)

ADC_Keywords: Surveys ; Supernovae ; Galaxies, optical ; Galaxy catalogs ;
Morphology ; Positional data
Keywords: supernovae: general - galaxies: kinematics and dynamics -
galaxies: spiral - galaxies: stellar content - galaxies: structure

Abstract:
Using a sample of 215 supernovae (SNe), we analyse their positions relative to the spiral arms of their host galaxies, distinguishing grand-design (GD) spirals from non-GD (NGD) galaxies. We find that: (1) in GD galaxies, an offset exists between the positions of Ia and core-collapse (CC) SNe relative to the peaks of arms, while in NGD galaxies the positions show no such shifts; (2) in GD galaxies, the positions of CC SNe relative to the peaks of arms are correlated with the radial distance from the galaxy nucleus. Inside (outside) the corotation radius, CC SNe are found closer to the inner (outer) edge. No such correlation is observed for SNe in NGD galaxies nor for SNe Ia in either galaxy class; (3) in GD galaxies, SNe Ibc occur closer to the leading edges of the arms than do SNe II, while in NGD galaxies they are more concentrated towards the peaks of arms. In both samples of hosts, the distributions of SNe Ia relative to the arms have broader wings. These observations suggest that shocks in spiral arms of GD galaxies trigger star formation in the leading edges of arms affecting the distributions of CC SNe (known to have short-lived progenitors). The closer locations of SNe Ibc versus SNe II relative to the leading edges of the arms supports the belief that SNe Ibc have more massive progenitors. SNe Ia having less massive and older progenitors, have more time to drift away from the leading edge of the spiral arms.

Description:
The file table3.dat lists the parameters of SNe located in spiral arms.
The file table4.dat lists the parameters of SNe located in interarm regions.

File Summary:

FileName	Lrecl	Records	Explanations
ReadMe	80	.	This file
table3.dat	76	178	List of arm SNe
table4.dat	65	37	List of interarm SNe

See also:
B/sn : Asiago Supernova Catalogue (Barbon et al., 1999-)
J/A+A/544/A81 : Supernovae and their hosts in the SDSS DR8 (Hakobyan+, 2012)
J/MNRAS/444/2428 : Disturbance levels of SNe host galaxies (Hakobyan+, 2014)
J/MNRAS/456/2848 : Properties of 500 SNe and their 419 hosts (Hakobyan+, 2016)
http://www.sdss.org : SDSS Home Page

Byte-by-byte Description of file: table3.dat

Bytes	Format	Units	Label	Explanations
1- 6	A6	---	SN	Supernova (SN) designation
10- 16	A7	---	Type	SN type (1)
17	A1	---	n_Type	[*] * for SN type inferred from the light curve
19- 32	A14	---	Gal	Host galaxy name
39- 43	A5	---	MType	Host galaxy morphological type (2)
46- 48	A3	---	SType	Host galaxy spiral arm class
54- 57	F4.2	---	RSN/R25	SN galactocentric distance
62- 65	F4.2	---	d1	Normalized distance d1
67	A1	---	f_d1	[:*] Distance d1 flag (3)
70- 74	F5.2	---	d2	? Normalized distance d2 (4)
76	A1	---	f_d2	[:*] Distance d2 flag (3)

Note (1): Uncertainties in SN type are marked by ":".

Note (2): Uncertainties in host galaxy morphological type are marked by ":".

Note (3): The distance is flagged by a "*" or ":" symbol when one of the edges of the spiral arm is roughly determined. In these cases, the contaminated

(by the light of a star or by the SN itself) edge is determined as
a symmetric reflection of the other edge from the peak.
The "*" symbol indicates that the SN is located between the peak and the
roughly determined edge of the arm, while
the ":" symbol indicates that the SN is located between the well-determined
edge and the peak.
Note (4): In a few cases, the d2 parameter was not determined because of
a noisy arm profile.

Byte-by-byte Description of file: table4.dat

Bytes	Format	Units	Label	Explanations
1- 6	A6	---	SN	Supernova (SN) designation
9- 13	A5	---	Type	SN type
14	A1	---	n_Type	[*] * for SN type inferred from the light curve
16- 29	A14	---	Gal	Host galaxy name
34- 37	A4	---	MType	Host galaxy morphological type
40- 42	A3	---	SType	Host galaxy spiral arm class
48- 51	F4.2	---	RSN/R25	SN galactocentric distance
54- 58	F5.2	---	d1	Normalized distance d1
61- 65	F5.2	---	d2	? Normalized distance d2 (1)

Note (1): In a few cases, the d_2 parameter was not determined because of
a noisy arm profile.

Acknowledgements:
Artur Hakobyan, hakobyan(at)bao.sci.am

References:
Hakobyan et al., Paper I 2012A&A...544A..81H, Cat. J/A+A/544/A81
Hakobyan et al., Paper II 2014MNRAS.444.2428H, Cat. J/MNRAS/444/2428
Hakobyan et al., Paper III 2016MNRAS.456.2848H, Cat. J/MNRAS/456/2848

(End) Artur Hakobyan [BAO], Patricia Vannier [CDS] 04-Aug-2016

The document above follows the rules of the Standard Description for Astronomical Catalogues; from this documentation it is possible to generate f77 program to load files into arrays or line by line