J/MNRAS/444/2428 Disturbance levels of SNe host galaxies (Hakobyan+, 2014)

Supernovae and their host galaxies.
II. The relative frequencies of supernovae types in spirals.
Hakobyan A.A., Nazaryan T.A., Adibekyan V.Z., Petrosian A.R., Aramyan L.S.,
Kunth D., Mamon G.A., de Lapparent V., Bertin E., Gomes J.M., Turatto M.
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ADC_Keywords: Supernovae ; Galaxies, optical ; Galaxies, peculiar

Keywords: supernovae: general - galaxies: active - galaxies: interactions -
galaxies: spiral - galaxies: stellar content

Abstract:
We present an analysis of the relative frequencies of different supernova (SN) types in spirals with various morphologies and in barred or unbarred galaxies. We use a well-defined and homogeneous sample of spiral host galaxies of 692 SNe from the Sloan Digital Sky Survey in different stages of galaxy-galaxy interaction and activity classes of nucleus. We propose that the underlying mechanisms shaping the number ratios of SNe types can be interpreted within the framework of interaction-induced star formation, in addition to the known relations between morphologies and stellar populations. We find a strong trend in behaviour of the N_{Ia}/N_{CC} ratio depending on host morphology, such that early spirals include more Type Ia SNe. The N_{Ibc}/N_{II} ratio is higher in a broad bin of early-type hosts. The N_{Ia}/N_{CC} ratio is nearly constant when changing from normal, perturbed to interacting galaxies, then declines in merging galaxies, whereas it jumps to the highest value in post-merging/remnant galaxies. In contrast, the N_{Ibc}/N_{II} ratio jumps to the highest value in merging galaxies and slightly declines in post-merging/remnant subsample. The interpretation is that the star formation rates and morphologies of galaxies, which are strongly affected in the final stages of interaction, have an impact on the number ratios of SNe types. The N_{Ia}/N_{CC} (N_{Ibc}/N_{II}) ratio increases (decreases) from star-forming to active galactic nuclei (AGN) classes of galaxies. These variations are consistent with the scenario of an interaction-triggered starburst evolving into AGN during the later stages of interaction, accompanied with the change of star formation and transformation of the galaxy morphology into an earlier type.

Description:
The full table of disturbance levels for 608 individual host galaxies of SNe. We define for all 608 hosts their level of morphological disturbance with the possible presence of signs of interactions and mergers.

File Summary:

FileName	Lrecl	Records	Explanations
ReadMe	80	.	This file
table1.dat	32	608	Disturbance levels of 608 individual host galaxies

See also:
B/sn : Asiago Supernova Catalogue (Barbon et al., 1999-)
J/PASP/117/773 : Classifications of SN host galaxies. III (van den Bergh+ 2005)
J/A+A/544/A81 : Supernovae and their hosts in the SDSS DR8 (Hakobyan+, 2012)
http://www.sdss.org : SDSS Home Page

Byte-by-byte Description of file: table1.dat

Bytes	Format	Units	Label	Explanations
1- 19	A19	---	Hgal	SN host galaxy identification (1)
21- 32	A12	---	Dlev	Disturbance level of SN host galaxy (2)

Note (1): JHHMMSS.ss+DDMMSS.s for SDSS JHHMMSS.ss+DDMMSS.s

Note (2): We define four categories of SN host disturbances as:
normal = hosts without any visible disturbance in their morphological structure
perturbed = hosts with visible morphological disturbance, but without long tidal arms, bridges, or destruction of spiral patterns
interacting = hosts with obvious signs of galaxy-galaxy interaction
merging = hosts with evidence of an ongoing merging process; see e.g. Lambas et al., 2012A&A...539A..45L
p-merg./rem. = post-merging/remnant, single galaxies that exhibit signs of a

past interaction, with a strong or already relaxed
disturbance, see e.g. Ellison et al., 2013MNRAS.435.3627E and
Lotz et al., 2008MNRAS.391.1137L, respectively

Acknowledgements:
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References:
Hakobyan et al., Paper I 2012A&A...544A..81H, Cat. J/A+A/544/A81

(End) Artur Hakobyan [BAO], Patricia Vannier [CDS] 23-Apr-2015

*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*