

## SUBJECT INDEX

Page numbers refer to the title page of the article in which the subject is mentioned.

abundance gradients	139	bipolar structures	83, 105, 129, 173, 180
abundances			187, 188, 204, 208, 447
- C/N/O	117, 139, 214, 216, 217 222, 319, 481, 505	black body	273
- Mg	217	Bowen fluorescence	157
- helium	139, 211, 212, 273, 493 481, 577	C nebulae	93
- nebular	1, 9, 73, 139, 191 192, 195, 196, 211, 212 214, 216, 218, 219, 220 221, 226, 229, 319, 493 353, 354	C-rich envelope	117
- photospheric	555	C-rich stars	453
accretion rate	523	Carbon stars	117, 381
AGB stars	174, 199, 305, 359, 381 391, 401, 425, 454, 446 473, 505, 523, 531, 541 543, 567, 577	Carbon stars - J-type	381
age - dynamical	319	cataclysmic variables	251
age - nebular	356, 391, 481, 577	catalogues	39
angular diameters	359	cavities	411
ansae	93	charge exchange	228
aperture synthesis	17	circumstellar dust	261
atmosphere blanketing	273	circumstellar shells	9, 117, 401, 450, 453
atmospheres NLTE models	168, 273, 305 306, 319	collimated flows	181, 184
atomic data	157, 577	color-color diagrams	9, 359, 401
atomic processes	211, 212, 224, 225 226, 228	common envelope	251, 310, 461, 505
B nebulae	93	condensations	541
Baade's window	167		93
binaries - spectroscopic	261		
binary stars	1, 94, 204, 251, 261 309, 310, 312, 314, 359 460, 461, 462, 493, 505 541, 567	data processing	177
bipolar flows	1, 93	direct images	1, 49, 83, 105, 168
			169, 172, 177, 461, 462
		direct images - narrow band	171, 173
			180, 185, 193, 301, 302, 351
		disk population	335
		distance scale	73, 189, 319, 357, 425
			493, 540, 577
		distances	17, 65, 73, 93, 189, 192
			196, 215, 216, 335, 359
			425, 481, 523, 567
		- kinematic	17
		- spectroscopic	168, 273
		dredge-up episodes	139
		dust	117, 139, 157, 197, 201

	202, 203, 381, 523	- center	63, 139, 167, 219, 481
- C-rich	567	- distribution	73, 425, 493
- carbide	117	- gradients	73, 219, 577
- carbon	381	- structure	73
- composition	117, 139, 201	galaxy - masses	577
	202, 203, 217, 577	galaxy - velocity dispersion	577
- distribution	117, 203	galaxy kinematics	352
- emission	9, 445	globules	223
- heating	9, 117, 174, 201, 203		
- O-rich	567	H burning stars	463, 505
- silica	117	H deficient stars	391
- size	201	H I line profiles	17, 65, 93, 129
- temperatures	9	H II regions - compact	202, 216
dust and gas envelopes	359	halo pn	62, 215, 335, 577
dust to gas ratio	202, 577	halos	195, 196, 197, 198, 199 202, 17, 105
dynamical evolution	105	H $\beta$ flux	39, 319
dynamical models	523	He burning stars	463, 505
		He I self absorption	211, 212
Eddington limit	273	height distribution	493
emission line profiles	93, 105, 319, 335	high velocity flows	1, 93, 180, 181, 183 184, 194
energy balance method	9, 229	HR diagram	539, 542, 545, 555 463, 473, 481, 493, 531 139, 229, 319, 401, 425
	306, 481	hydrodynamical calculations	391, 457
envelope acceleration	457		459, 505, 543
envelope ejection	391	hydrodynamical shaping	83, 411
evolution to pn	381		
evolutionary time scales	481, 523	initial mass function	473, 577
evolutionary tracks	401, 463, 473, 539	instabilities	411
expansion velocities	1, 39, 65, 93, 182	internal motions	93, 105, 319
	187, 189, 190, 191, 194	ionization correction factor	219, 319
	196, 198, 204, 209, 356	ionization structure and models	117, 577
	411, 425, 481, 567	infrared	
extinction		- color-color diagram	9, 58, 448 449, 452
- distances	65, 481	- emission	117, 201, 202
- internal	117	- energy distribution	57
- interstellar	308, 577	- excess	9, 60, 210, 359
extragalactic distances	577	- features - SiC	117
extragalactic pn	1, 39, 213, 319, 335	- features - silicate	117
	351, 353, 354, 355, 356	- features - unidentified	117
	357	- fluxes	9, 117, 401, 523
		- halos	9
Fabry Perot interferometry	178, 189, 195	- images	117, 178, 179, 208
	197	- maps	9
far infrared lines	214	- photometry	9, 39, 54, 58, 445
filling factor	65		
galactic			
- chemical evolution	577		
- rotation curve	577		

		449	model atmospheres	241, 261
IRAS	- spectra	59, 443, 445, 446	molecules	129
	- colors	9, 63	- C <sub>2</sub> H <sub>2</sub>	446
	- images	186	- CN	17, 129
	- sources	9, 52, 64, 174, 210 251, 315, 359, 381, 567 445, 448, 450, 452	- CO	17, 129, 157, 204, 205 216, 381, 401
IUE spectra	- spectra	9, 401 1, 39, 139, 251, 273 293, 308, 313, 314, 317 319, 355	- H <sub>2</sub>	17, 129, 157, 206, 207 208
			- H <sub>2</sub> O	450
			- HCN	129, 204, 453
			- MgS	117
			- OH	17, 129, 205, 209, 210 205, 446
K-type stars		312	morphological classification	105
kinematical models		93	morphology	1, 60, 65, 83, 105 169, 172, 174, 179, 193
kinematics		1, 73, 180, 181, 183 184, 192, 196, 200, 205 319, 458, 493		411, 455, 458, 461, 462 481, 567
knots		183	- butterfly	1, 83
			- elliptical	1, 83
			- round	1, 83
			- type I	105
			- type II	105
late type stars		52	multiple shells	1, 105, 458, 523, 567
line intensities		39	multiple structures	173, 184, 193, 200
line profile fits		157, 229, 273	multiple winds model	411
line profiles		93, 181, 182, 188, 189 190, 198, 200, 204, 209 241		
long period variables		451	nebular	
luminosities		359	- density	1, 60, 83, 195, 214 523, 577
			- density structures	157, 175 197, 199, 220, 221, 223
m-s death rate		493		353
m-s turnoff mass		425, 493	- dimensions	39, 186, 577
M-type stars		21, 312, 381	- emission	9, 226
magnetic braking		251	- evolution	356, 523, 545, 567
magnetic fields		17, 193, 455	- excitation classification	319
magnitude-age diagram		481, 542	- mass	1, 60, 83, 207, 319 355
magnitude-radius relation		531	- mass distribution	473
maser sources		359	- spectral evolution	17
mass loss		381, 567, 577	- structure	39, 180, 205, 206, 208 444, 567
mass loss rates		1, 17, 129, 199, 207 241, 261, 273, 293, 317 359, 401, 411, 454, 493 543	- temperatures	10, 195, 223, 319
				353
mass tranfer		505	- temperature structure	176
mass-density diagram		319	neutron stars	505
mass-radius relation		65, 83, 319, 523	novae	315
mass-semimajor axis relation		505	nuclear timescales	391
mass-T <sub>eff</sub> diagram		463		
Miras		359, 401, 425, 567, 577		

O-rich envelope	117	- identification	171, 192, 301
O rich stars	453		303
O-type stars	216, 308, 309	- luminosity	307, 335
Of-type stars	229, 308, 309	- magnitudes	1, 229, 301, 302
OH/IR stars	129, 359, 209, 210, 391 401, 425, 445, 448, 449 450, 577	- parameters	1, 39, 241, 293 545
OH/IR stars - formation	73	- photometry	309, 310
OH/IR stars - evolution rate	425	polarization	17, 455
optical depths	157, 523	population I OB stars	293
orbital periods	261	population I stars	65, 391
OVI-type stars	229, 251, 545, 311	population II stars	391
P Cygni profiles	241, 273, 293, 318, 446	post AGB evolution	391
photoionization models	157, 217, 219 223, 224, 227, 228, 443	post AGB stars	359, 445, 457, 463, 473
photometry	55, 56, 57, 168, 215	pregalactic helium to hydrogen	213, 577
photometry - narrow band	49, 50, 57	proper motions	65
physical processes	1, 139, 157	proto-planetary nebulae	401, 443, 445 446, 447, 448, 452, 455 458
planetary nebulae		pulsating stars	251, 311, 545, 467
- birth rates	73, 251, 425, 473 493, 540, 545, 577	pulsation analysis	311
- candidates	335	pulsation modes	251
- classification	73		
- compact	17, 444		
- formation	505		
- ionization	523		
- low excitation	52		
- luminosity function	335		
- misclassified	21, 52		
- new	1, 21, 61, 62, 63 64, 167, 335, 351		
- origin	523		
- positions	21, 61, 62		
- progenitor mass	319, 381 425, 493		
- progenitors	117, 359, 451, 567		
- progenitors C-rich	359		
- progenitors O-rich	359		
- surveys	335		
- time evolution	531		
planetary nebulae central stars			
- absolute magnitude distribution	545		
- chemical composition	555		
- classification	493		
- cool	261		
- evolution	293, 367, 463, 473 531, 539		
- helium rich	251, 273		
		shaping mechanisms	83
		shell formation	391, 523
		Shklovsky method	319, 481
		shock excited lines	129
		shock heating	447
		shocks	83, 129, 157, 180, 411 447, 456, 460
		space missions	65, 577
		spatial density	73
		speckle interferometry	1, 319, 443
		spectroscopic data	17, 50, 51, 52, 53 54, 56, 59, 168, 179 183, 184, 190, 191, 192 197, 215, 219, 220, 229 273, 309, 310, 317, 319 354, 444, 458
		standard candles	335, 357, 577

statistical method	481	variability	1
stellar		- infrared flux	359
- CO core	505	- photometric	55, 56, 261
- core mass	359, 401, 523	- radial velocity	261
- envelope	359, 545	VLA data	17, 60, 129, 176, 210
- flux distribution	157, 308, 314		401, 443, 567
- formation	505		
- gravities	1, 273, 316, 481, 545	white dwarfs	251, 273, 355
- mass	251, 273, 355, 454, 481 531, 539, 340, 567, 577	- CO	505
- mass-luminosity relations	531	- DA	391, 545, 555, 567
- populations	493	- birth rate	545
- rotation	555	- evolution	555
- spectra	9, 229, 545	- evolutionary lifetimes	545
- structure and evolution models	261, 311, 425, 451, 542 543, 577	- formation	73, 391
- temperatures	1, 9, 229, 273 307, 314, 316, 335, 481	- formation rate	425, 577
Stoy temperatures	157, 319	- magnetic	555
super giant stars	452	- mass	540
superwind	391, 411, 458, 505, 523 567	- mass distribution	493, 555
symbiotic stars	21, 51, 52, 57,	- non DA	391, 545, 555
terminal velocity	1, 273	- progenitors	555
thermal pulses	391	wind features	241
thermal timescales	391	wind timescales	391
transition phase	210, 391	wind velocity	207, 241
transition time	391, 463	winds	1, 65, 93, 157, 174 194, 273, 293, 381, 401 411, 473, 456, 457, 458 523, 531, 567, 577
Type I pn	139, 208, 211, 212, 213 319, 353, 493	- interacting	83
Type II pn	139, 213, 219, 222, 493 577	WR features	545
Type III pn	139, 493	WR-type stars	1, 229, 293, 355, 391 216, 261, 307, 308, 313 315, 319
Type IV pn	139, 493, 577	X-ray observations	50, 241, 304
UV spectroscopy	50	Zanstra luminosities	229
		Zanstra temperatures	1, 9, 157, 229, 241 301, 305, 306, 315, 319 481, 523, 531, 567