

Curriculum Vitae : Brigitte ROCCA-VOLMERANGE

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Professor Université Paris Sud, 1st Class, emeritus

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Formation/diploma: Licence; Master in Physics 1963, "Agrégation de Physique" (rank 1st on Physics proof) 1964; PhD in nuclear physics 1975 « Slowing down of neutrons in the fast breeder reactors »

Functions/Grades: Assistant Professor University 1969 Full Professor 1988; Professor Emeritus 2011 at Université Paris sud XI, Orsay, France

Responsibilities: Teaching groups : DEUG, Licence Maîtrise

*Member of the Doctoral School ED127 Board "Astrophysique et Sciences Spatiales" (1997- 2011)

*Direction DEA (Diplôme d'Etudes Approfondies, ~Master degree) « Astrophysique et Techniques Spatiales », Université de Paris sud XI, Orsay, (1997-2000)

*Founding of Doctoral Lectures for PhD students (2000-2011), ~15 modulus of 15h / 30h

*A specific modulus: "Evolution des galaxies lointaines, Relation AGN-starburst" (~15 doctorants), interveners F. Bournaud (CEA), P. Salomé (Obs Paris), C. Pichon (IAP), G. Drouart (U. Chalmers)...
*2017-2018-2019: " Distant galaxies: Observations and models" by B. Rocca-Volmerange (IAP) and F. Hammer (Obs. Paris),): interveners Prof. F. Daigne (IAP), Drs H. Flores, M. Fioc , M. Puech, S. Vergani, H. Atek an and others

PhD supervisions: > 13 PhD students and multiple probations of ingeniors and undergraduates

International and european programmes européens (PI and co-PI) as HzRG/SPITZER, HERGE (Herschel RadioGalaxy), EGSG (ExtraGalactic Sources with Gaia, ...

Publications (ADS) > 234

Associations vice-Pdte « Femmes & Sciences » 2009-2015 ; Colloquium « Nouveaux parcours, doubles cursus et passerelles à l'Université : sont-ils favorables aux Femmes Scientifiques dans l'entreprise et la Recherche », at the Ministère de l'Enseignement Supérieur et de la Recherche, 12 Avril 2013,

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Research objectives : Normal Galaxies, Radio Galaxies, primeval Galaxies (evolution, formation, distant universe, cosmology)

- Galaxy evolution from local $z=0$ to $z>10$ to constrain galaxy formation physics (ellipticals, spirals and starbursts)
- Link with galaxy clusters, dark matter haloes to primeval fluctuations.
- Stellar Black holes (from Core Collapse SN) and SuperMassive Black holes and AGN-Galaxy link.

- **1. Models for scenarios of galaxy evolution (SEDs by types and ages) and properties (masses, ages, grains, metallicity, gas, many other outputs)** Spectral, chemical and photometric evolution of galaxies is followed combining gas clouds, star formation, stellar evolution, stellar spectra, stellar deaths (SN and AGB) and coherent nebular emissions.

2. **Cosmology effects (distance, expansion of the universe)** required to relate the redshift of the light received from local galaxies up to Cosmic Dawn, (age of the universe < 1 Gyr)
3. **Interpretations: Individual galaxies and radio galaxies. Surveys and faint galaxy counts** Luminosity functions and mass functions by z bins and types. (Pégase.2)
4. **Recent Pégase.3 improvement-1: Extension to dust emission for synthetic SEDs on the farUV to farIR/submillimeter wavelength coverage**
5. **Recent Pégase.3 improvement-2: Equivalent widths of nebular emissions with metallicity effect with lines and dust-corrected continua (Pégase3 + Cloudy)**

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Annexe 1 Projet d'Études des GALAXIES par Synthèse Evolutive « PÉGASE » (<http://www.iap.fr/pegase>)

- Pégase.2 (Fioc M. and Rocca-Volmerange B., 1997, A&A, 326, 950)
See Astronomy and Astrophysics Vol. 500 No. 1 (June II 2009), among 40 articles on the 40 years birthday on the basic paper **PEGASE: a UV to NIR spectral evolution model of galaxies** » - p. 521, commented by G. Bruzual A.: <<With over 500 citations in refereed papers listed in the ADS to date, the paper by Fioc & Rocca-Volmerange is without doubt an important piece of work... »
- Pégase.3 (Fioc M. and Rocca-Volmerange B., 2019ab, A&A, in press and arXiv) **extends the SED predictions from the far-UV to the far-IR by modeling dust (attenuation and emission by Monte Carlo radiative transfer). An article and the detailed documentation are proposed.**
- **Multiple Applications for interpreting observations data from HST, Spitzer, Herschel, ALMA Spitzer and submm (voir section 3) and the future with Gaia, JWST, EUCLID, e ELT**

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Annexe 2 : Publications (2019-2005)

Fioc, Michel; Rocca-Volmerange, Brigitte, accepted by A&A, in press and 2019arXiv190207929F "Pégase.3: A code for modeling the UV-to-IR/submm spectral and chemical evolution of galaxies with dust"

Fioc, Michel; Rocca-Volmerange, Brigitte, 2019arXiv190202198F,
The Pégase.3 code of spectrochemical evolution of galaxies: documentation and complements

Rocca-Volmerange, Brigitte; Hilberer, Antoine.; Fioc, Michel. 2018arXiv181204283R
Lyman and Balmer breaks reveal mature $z=8$ galaxies with the code Pégase.3

Rocca-Volmerange, Brigitte, 2018arXiv181106792R, *The code PEGASE.3 for distant radioGalaxies with JWST*

Gaia Collaboration et al. ;DR1, 2017, on

Cepheids and RR Lyrae stars, Open cluster astrometry, VizieR Online Data Catalog

Drouart, G., De Breuck, C., Vernet, J., Seymour, N., Lehnert, M., Barthel, P., Bauer, F.E., Ibar, E., Galametz, A., Haas, M., Hatch, N., Mullaney, J.R., Nesvadba, N., Rocca-Volmerange, B., Rottgering, H.J.A., Stern, D., Wylezalek, D., arXiv:1404.1080
(Rapidly growing black holes and host galaxies in the distant Universe from the Herschel Radio Galaxy Evolution Project)

Bailer-Jones, C. A. L.; Andrae, R.; Arcay, B.; Astraatmadja, T.; Bellas-Velidis, I.; Berihuete, A.; Bijaoui, A.; Carrión, C.; Dafonte, C.; Damerjji, Y.; and 38 coauthors, 2013, A&A, 559, 74 (*The Gaia astrophysical parameters inference system (Apsis). Pre-launch description*)

Rocca-Volmerange, B.; Drouart, G.; De Breuck, C.; Vernet, J.; Seymour, N.; Wylezalek, D.; Lehnert, M.; Nesvadba, N.; Fioc, M. 2013, MNRAS, 429, 278 (*Starburst and old stellar populations in the $z \approx 3.8$ radio galaxies 4C 41.17 and TN J2007-1316*)

Drouart, G.; De Breuck, C.; Vernet, J.; Laing, R. A.; Seymour, N.; Stern, D.; Haas, M.; Pier, E. A.; Rocca-Volmerange, B., 2012, A&A, 548, 45 (*Jet and torus orientations in high redshift radio galaxies*)

Seymour, N.; Altieri, B.; De Breuck, C.; Barthel, P.; Coia, D.; Conversi, L.; Dannerbauer, H.; Dey, A.; Dickinson, M.; Drouart, G.; and 22 coauthors, 2012, ApJ, 755, 146 (*Rapid Coeval Black Hole and Host Galaxy Growth in MRC 1138-262: The Hungry Spider*)
Robin, A. C.; Luri, X.; Reylé, C.; Isasi, Y.; Grux, E.; Blanco-Cuaresma, S.; Arenou, F.; Babusiaux, C.; Belcheva, M.; Drimmel, R.; Jordi, C.; Krone-Martins, A.; Masana, E.; Mauduit, J.C.; Mignard, F.; Mowlavi, N.; Rocca-Volmerange, B.; Sartoretti, P.;

Slezak, E ; Sozzetti, A.2012, A&A, 543, 100 (*Gaia Universe model snapshot. A statistical analysis of the expected contents of the Gaia catalogue*)

Karamelas, A.; Kontizas, M.; Rocca-Volmerange, B.; Bellas-Velidis, I.; Kontizas, E.; Livanou, E.; Tsalmantza, P.; Dapergolas, 2012, A&A, 538, 38 (*Optimization of synthetic galaxy spectra.Application to ESA's Gaia mission*)

Tsalmantza, P.; Karamelas, A.; Kontizas, M.;Bailer-Jones, C. A. L.; Rocca-Volmerange, B.; Livanou, E.; Bellas-Velidis, I.; Kontizas, E.; Vallenari, A.A , 2012, A&A, 537, 42 (*A semi-empirical library of galaxy spectra for Gaia classification based on SDSS data and PÉGASE models*)

De Breuck, C.; Seymour, N.;Stern, D.; Willner, S. P.; Eisenhardt, P. R. M.; Fazio, G. G.; Galametz, A.; Lacy, M.; Rettura, A.; Rocca-Volmerange, B.; Vernet, J., 2010, ApJ, 725, 36 (*The Spitzer High-redshift Radio Galaxy Survey*)

Tsalmantza, P.; Kontizas, M.; Rocca-Volmerange, B.;Bailer-Jones, C. A. L.; Kontizas, E.; Bellas-Velidis, I.;Livanou, E.; Korakitis, R.; Dapergolas, A.; Vallenari, A.; Fioc, M., 2009, A&A,504, 1071 (*Towards a library of synthetic galaxy spectrafor Gaia and preliminary results of classification and parametrization of unresolved galaxies . II*)

Tasse, C.; Le Borgne, D.; Röttgering, H.; Best, P. N., Pierre, M.; Rocca-Volmerange, 2008, A&A, 4920, 879 (*Radio-loud AGN in the XMM-LSS field I.Optical identification and sample selection*)

Seymour, N.; Stern, D.; De Breuck, C.; Vernet, J.; Rettura, A.; Dickinson, M.; Dey, A.; Eisenhardt, P.; Fosbury, R.; Lacy, M.; Mc Carthy, Pat ; Miley, George ; Rocca-Volmerange, Brigitte ; Rottgering, Huub ; Stanford, S.Adam ; Teplitz, Harry ; van Breugel , Wil ; Zirm, Andrew ; 2007, ApJS, 171,353 (*The Massive Hosts of Radio Galaxies across Cosmic Time*)

Tsalmantza, P.; Kontizas, M., Rocca-Volmerange, B.;Korakitis, R.;Livanou, E.; Dapergolas, A.; Bellas-Velidis, I.; Vallenari, A.; Fioc, M. Kontizas, E.; Bailer-Jones, C. A. L.; 2007A&A...470..761 (*Towards a library of synthetic galaxy spectra and preliminary results of classification and parametrization of unresolved galaxies for Gaia. I*)

Rocca-Volmerange, B., de Lapparent, V., Seymour, N., Fioc, M., 2007, Astronomy. Astrophys, 475, 801 {*The 12um ISO-ESO-Sculptor and 24um Spitzer faint counts reveal a population of ULIRG/AGN/dusty massive ellipticals Evolution by types and cosmic star formation*}

Seymour, N., Rocca-Volmerange, B., de Lapparent, V., 2007, Astronomy. Astrophys, 475, 791{*A 12um ISOCAM Survey of the ESO-Sculptor Field: Data reduction and Analysis*}

Seymour, N; Stern, D; De Breuck, C; Vernet, J; Rettura, A; Dickinson, M; Dey, A; Eisenhardt, P; Fosbury, R; Lacy, M; Rocca-Volmerange, B., and 7 coauthors 2007, Astrophysical Journal Sup. Series, 171, pp. 353-375 {*The Massive Hosts of Radio Galaxies Across Cosmic Time*}

Tsalmantza, P.; Kontizas, M.; Bailer-Jones, C. A. L.; Rocca-Volmerange, B.; Korakitis, R.; Kontizas, E.; Livanou, E.; Dapergolas, A.; Bellas-Velidis, I.; Vallenari, A.; Fioc, M., 2007, A & A, 470, 761 {*Towards a library of synthetic galaxy spectra and preliminary results of classification and parametrization of unresolved galaxies for Gaia*}

Rettura, A.; Rosati, P.; Strazzullo, V.; Dickinson, M.; Fosbury, R. A. E.; Rocca-Volmerange, B.; Cimatti, A.; di Serego Alighieri, S.; Kuntschner, H.; Lanzoni, B.; 6 coauthors, 2006 A & A...458..717 {*Comparing dynamical and photometric-stellar masses of early-type galaxies at $z \sim 1$* }

De Breuck, C; Klamer, I; Johnston, H; Hunstead, R; Bryant, J; Rocca-Volmerange, B; Sadler, E.M. 2006, MNRAS, 366, 58 {*A search for distant radio galaxies from SUMSS and NVSS - II. Optical spectroscopy1*}

Rocca-Volmerange, B., M. Remazeilles , 2005, A & A, 433, 73 {*Evidence of intense hot (~340K) dust emission in 3CR radio galaxies : the most dissipative source of cooling in AGNs*}