

# Thibaut DECRESSIN

# Curriculum vitae

Born April 28, 1980 in Limoges (France)  
Nationality: French

Argelander-Institut für Astronomie  
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## Scientific speciality

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- Theoretical astrophysics, stellar evolution with an emphasis on the effects of improved physical treatment on chemical evolution.
- Theoretical astrophysics, dynamics of stellar clusters.

## Scientific experience

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2008–...	<b>Post-doctoral</b> position at the Argelander-Institut für Astronomie, Bonn, Germany, Swiss FNRS fellow
2003–2007	<b>PhD thesis in Astrophysics</b> at Geneva Observatory, University of Geneva, Switzerland, on the <i>Abundance anomalies in globular clusters in light of models of rotating stars</i> , under the supervision of Dr. Corinne Charbonnel
March–June 2003	<b>Master thesis in Astrophysics</b> at Observatoire Midi-Pyrénées, University Paul Sabatier, Toulouse, France under the supervision of Dr. Corinne Charbonnel, on <i>Effects of internal gravity waves on angular momentum transport in stars</i>
Mai–June 2002	<b>Research project in Physics</b> at the Observatoire Midi-Pyrénées, University Paul Sabatier, Toulouse, France, under the supervision of Dr. Corinne Charbonnel, on <i>Effects of initial composition on the properties of low mass stars at low metallicity</i>

## Academic record

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2003–2007	<b>PhD in Astrophysics</b> at the Geneva Observatory, University of Geneva, Switzerland, Swiss FNRS fellow, supervised by Dr. Corinne Charbonnel
2002–2003	<b>DEA (Master2 degree) in Astrophysics, Planetology, and spatial sciences and techniques</b> at University Paul Sabatier, Toulouse, France, obtained in June 2003; “Mention Assez Bien”
2001–2002	<b>Maîtrise (Master1 degree) in fundamental physics</b> at University Paul Sabatier, Toulouse, France, obtained in June 2002; “Mention Bien”
2000–2001	<b>Licence (Bachelor degree) in fundamental physics</b> at University Paul Sabatier, Toulouse, France, obtained in June 2001; “Mention Bien”

## Teaching experience and public outreach

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- Lectures on “Stellar structure and evolution” at the University Libre de Bruxelles, Belgium, September–November 2008, 16h to master students
- Lectures on “Stars and stellar evolution” at Bonn University (Germany), November–December 2008, 6h to master students
- Lecture at NIC–IX Summer School on *The treatment of nucleosynthesis in stellar evolution codes*, 1h, June 2006, Geneva, Switzerland.
- Joint management of TP (training period) for five undergraduate students at Geneva University during my PhD.
- Outreach: participation in various outreach actions during astronomical events (solar eclipse, Venus transit...) and public observations (planetarium and 70 cm telescope) during my PhD.

## Scientific results

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- 6 referee papers in A&A and AN, (3 in preparation)
- 12 contributions to international conferences (8 oral presentations and 4 posters)
- 1 invitation to a seminar lecture in Meudon Observatory (Paris, France)

## Collaborations and contacts

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- Corine Charbonnel, Georges Meynet, Observatoire de Genève, Genève, Switzerland, on *stellar evolution and globular clusters evolution*.
- Pavel Kroupa, Holger Baumgardt, Argelander-Institut für Astronomie (AIfA), Bonn, Germany, on *dynamics of two stellar populations in globular clusters*.
- Lionel Siess, Marcel Arnould, Université Libre de Bruxelles (U.L.B.), Bruxelles, Belgium, on *numerical development in the stellar evolution code STAREVOL and stellar yields*.
- Ana Palacios, Groupe de Recherches en Astronomie et Astrophysique du Languedoc (GRAAL), Montpellier, France, on *numerical development in the stellar evolution code STAREVOL and stellar yields*.
- Stéphane Mathis, Commissariat à l'Énergie Atomique (C.E.A.), Laboratoire Plasmas Stellaires et Astrophysique Nucléaire, Saclay, France, on *stellar secular hydrodynamic and mixing's impact on stellar evolution*.
- Nikos Prantzos, Institut d'Astrophysique de Paris (I.A.P.), Paris, France, on *chemical evolution of globular clusters*.
- Member of the French group on "Transport processes in evolved stars and observational diagnostics" supported by the National Program of Stellar Physics (P.N.P.S).

## Computer programming

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- *Simulation tools*:
  - ◊ stellar evolution code: STAREVOL and Geneva code
  - ◊ stellar dynamical code: Nbody4 code
- *Programming language*: Fortran, Perl, L<sup>A</sup>T<sub>E</sub>X, SuperMongo (good knowledge), HTML, Java, Matlab, Maple (basis skill)
- *System*: Linux, Solaris, Windows.

## Language

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- French: mother tongue
- English: correct level
- German: basis

### Refereed journals

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- **Decressin T.**, Mathis S., Palacios A., Siess L., Talon S., Charbonnel C., Zahn J.-P., 2008, A&A accepted, 16 pages  
*Diagnoses to unravel secular hydrodynamical processes in rotating main sequence stars*
- **Decressin T.**, Baumgardt H., Kroupa P., 2008, A&A in press, 9 pages  
*The evolution of two stellar populations in globular clusters I. The dynamical mixing timescale*
- **Decressin T.**, Baumgardt H., Kroupa P., 2008, AN in press, 4 pages  
*Dynamical mixing of two stellar populations in globular clusters*
- **Decressin T.**, Charbonnel C., Meynet G., 2007, A&A, 475, 859-873, cover page  
*Origin of the abundance patterns in Galactic globular clusters: constraints on dynamical and chemical properties of globular clusters*
- **Decressin T.**, Meynet G., Charbonnel C., Prantzos N., Ekström S., 2007, A&A, 464, 1029-1044  
*Fast rotating massive stars and the origin of the abundance patterns in galactic globular clusters*
- Mathis S., **Decressin T.**, Palacios A., Eggenberger P., Siess L., Talon S., Charbonnel C., Turck-Chièze S., Zahn J.-P., 2007, Astron. Nachr., 328, 10, 1062-1065  
*Meridional circulation in the radiation zones of rotating stars: origins, behaviors and consequences on stellar evolution*
- **Decressin T.**, Charbonnel C., Palacios A., Siess L., in preparation  
*Rotating AGB stars in globular clusters*
- **Decressin T.**, Baumgardt H., Kroupa P., in preparation  
*The evolution of two stellar populations in globular clusters II. Effects of initial gas expulsion*
- **Decressin T.**, Meynet G., Charbonnel C., in preparation  
*Origin of the abundance patterns in Galactic globular clusters: effect of He-enrichment on synthetic diagrams*

### Conference proceedings – Oral communication

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- **Decressin T.**, Baumgardt H., Kroupa P., Meynet G., Charbonnel C., 2008, The ages of stars, IAU Symposium 258, Held in Baltimore, US, October 13-17 2008, edited by D. Soderblom et al., CUP, 8 pages  
*The ages of Galactic globular clusters in the context of self-enrichment*
- Meynet G., **Decressin T.**, Charbonnel C., 2008, "Memorie della Societa' Astronomica Italiana", Vol. 79 No. 2, eds. S. Cassisi & M. Salaris, 8 pages, in press  
*Massive stars, globular clusters and elliptical galaxies*
- **Decressin T.**, Charbonnel C., 2006, Why Galaxies Care About AGB Stars, August 7-11 Vienna, Austria Eds: F. Kerschbaum, C. Charbonnel, and B. Wing, 5 pages  
*The impacts of rotation on nucleosynthesis in metal-poor AGB-stars*
- Charbonnel C., **Decressin T.**, Meynet G., Prantzos N., Ekström S., 2006, From Stars to Galaxies: Building the pieces to build up the Universe, Venice, 16-20 October 2006, Eds: A. Vallenari, R. Tantalò, L. Portinari and A. Moretti, 6 pages  
*Nuclei in Globular Clusters – A Long-Standing Problem Revisited*
- Mathis S., **Decressin T.**, Palacios A., Siess L., Charbonnel C., Turck-Chièze S., Zahn J.-P., 2006, SOHO-18/GONG-2006/HELAS-I "Beyond the Spherical Sun: a new era of helio- and asteroseismology", meeting held in Sheffield, United-Kingdom; August 7-11, 2006; Eds: B. Fleck, K. Fletcher; ESA SP-624, Published on CDROM, p.36.1, 8 pages  
*Dynamical processes in stellar radiation zones: secular magnetohydrodynamics of rotating stars*

- Mathis S., Eggenberger P., **Decressin T.**, Palacios A., Siess L., Charbonnel C., Turck-Chièze S., Zahn J.-P., 2006, Joint HELAS and CoRoT/ESTA Workshop on Solar/Stellar Models and Seismic Analysis Tools, meeting held in the Centro de Astrofísica da Universidade do Porto, Porto, Portugal; November 20-23, 14 pages  
*Dynamical processes in stellar radiation zones: advances in secular magnetohydrodynamics of rotating stars*
- **Decressin T.**, Siess L., Charbonnel C., Leclair G., 2005, International Conference on Planetary Nebulae as Astronomical Tools. AIP Conference Proceedings, Volume 804, pp. 124-128  
*The Fate of Super-AGB Stars at Low Metallicity*
- **Decressin T.**, Charbonnel C., Siess L., Palacios A., 2004, 7th Torino Workshop on Nucleosynthesis in AGB Stars, August 2-6, Cambridge, UK, Eds: R.J. Stancliffe, M.A. Lugaro, C.A. Tout, MSAI, v.75, pp.682-687  
*Rotating models of low metallicity AGB stars with STAREVOL,*

## Conference proceedings – Poster communication

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- **Decressin T.**, Charbonnel C., 2006, Proceedings of the International Symposium on Nuclear Astrophysics - Nuclei in the Cosmos - IX. 25-30 June 2006, CERN., p.86.1, 5 pages  
*Nucleosynthesis and mixing in rotating AGB stars at low metallicity,*
- Mathis S., **Decressin T.**, Palacios A., Siess L., Charbonnel C., Turck-Chièze S., Zahn J.-P., 2006, SF2A, Paris, France; June 26-30, Eds: D. Barret, F. Casoli, T. Contini, G. Lagache, A. Lecavalier and L. Pagani; pp.491-492  
*Dynamical processes in stellar radiation zones: secular magnetohydrodynamics of rotating stars,*
- **Decressin T.**, Charbonnel C., 2005, From Lithium to Uranium: Elemental Tracers of Early Cosmic Evolution, IAU Symposium 228, Held in Paris, France, May 23-27, edited by Hill, V., François, P., Primas, F., CUP, 2005, pp.395-396  
*Did rotating AGB stars pollute the galactic globular clusters?,*
- **Decressin T.**, Charbonnel C., Siess L., Palacios A., 2004: SF2A, Paris, France, Eds: F. Combes, D. Barret, T. Contini, F. Meynadier and L. Pagani. EdP-Sciences, Conference Series, pp.283-284  
*The role of low metallicity AGB stars in globular cluster evolution,*