

Dr Antoine STRUGAREK

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Chercheur post-doctoral

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Expérience professionnelle

- Mar 13 - **Chercheur post-doctoral**
Canada Université de Montréal, *Groupe de Recherche en Physique Solaire*
Co-encadrement de deux étudiants de Master
- Sep 12 - Déc 12 **Enseignant**
Sep 10 - Déc 10 Université Paris-Diderot, Paris – INSTN, Saclay
France 80 heures de cours en physique et astrophysique aux niveaux L1, L2 et M2
- Mar 09 - Juil 09 **Stage de Master 2**
France CEA - Centre de Cadarache
Modélisation théorique et numérique de la turbulence gyrocinétique à l'aide d'un code 5D
- Mai 08 - Juil 08 **Stage en mathématiques appliquées**
Canada Polytechnique Montréal
Implementation d'un solveur éléments finis 3D - Galerkin discontinu (Fortran)

Formation

- Juil 13 **Ecole d'été d'Alpbach sur le climat spatial**
Autriche Concept de mission publié dans [Strugarek, et al., Space Weather and Space Climate, 5, A4](#)
- Oct 09 - Déc 12 **Doctorat en physique des plasmas - physique stellaire et fusion nucléaire contrôlée**
France Commissariat à l'Energie Atomique (CEA), centres de Saclay et Cadarache
Transport, turbulence et confinement: des tokamaks au magnétisme des étoiles
Doctorat soutenu le 19 novembre 2012. Mention très honorable avec les félicitations du jury
- Sep 06 - Sep 09 **Ecole Nationale Supérieure de Techniques Avancées (ENSTA Paris Tech)**
France *Ecole d'ingénieur*, spécialisation en mathématiques et dynamique des fluides
Master 2 "Modélisation et Simulation", INSTN, Saclay
Spécialisation en dynamique des fluides et calcul haute performance, *Mention Très Bien*

Langues étrangères et informatique

- Français** Langue maternelle
- Anglais** Courant (TOEIC: 985/990)
- Informatique** C, Fortran, MPI, OpenMP, Python, IDL, Matlab
Collaborateur officiel: [PLUTO](#), [yt](#)

Bourses et distinctions

- 2016 - Bourse post-doctorale **CNES**
- 2014 - 2016 **CITA National Fellow** (bourse post-doctorale)
- 2014 - 2015 **Bourse post-doctorale d'excellence pour étudiants étrangers (MELS)**
- 2013 **Prix de la thèse 2013** décerné par la société française d'astronomie et astrophysique (SF2A)

Principales publications

2016	Strugarek et al. , Advances in Space Research, sous press <i>Modelling turbulent stellar convection zones: sub-grid scales effects</i>
2015	Strugarek et al. , The Astrophysical Journal, 815 , 111 <i>Magnetic games between a planet and its host star: the key role of topology</i>
2014	Strugarek, et al. The Astrophysical Journal, 795 , 86 <i>On the diversity of magnetic interactions in close-in star-planet systems</i>
2014	Strugarek & P Charbonneau , Solar Physics, 289 , 11, 4137 <i>Predictive capabilities of avalanche models for solar flares</i>
2014	Strugarek, P Charbonneau, et al , Solar physics, 289 , 8, 2993 <i>Deterministically Driven Avalanche Models of Solar Flares</i>
2013	A S Brun, M Browning, M Dikpati, H Hotta and Strugarek , Space Science Reviews, 1-36 <i>Recent Advances on Solar Global Magnetism and Variability</i>
2011	Strugarek , A S Brun and J-P Zahn, Astronomy & Astrophysics 532 , 34 <i>Magnetic confinement of the solar tachocline: II. Coupling to a convection zone</i>

Conférences internationales et Séminaires

Jun 2016	<i>AstroFluids</i> , Observatoire de Paris, France	Oral invité
Déc 2015	<i>Dynamo effect workshop</i> , Princeton University, USA	
Juil 2015	<i>Festival de théorie</i> , Aix-en-Provence, France	
Jun 2015	<i>Solar Dynamo Frontiers Workshop</i> , Boulder, USA	
Nov 2014	<i>Star-planet interactions and the H-Z</i> , Saclay, France	
Oct 2014	<i>Space weather of the early Sun Workshop</i> , Tucson, USA	
Sep 2014	<i>First SPIRou Science Workshop</i> , Paris, France	
Sep 2013	<i>Self-Organized Criticality & Turbulence</i> , Bern, Switzerland	
Sep 2012	<i>Helioseismology and Dynamics of the Solar Interior</i> , Bern	
Août 2012	<i>Theory of Fusion Plasmas</i> , Varenna, Italy	
Juin 2014	<i>Cool Stars 18</i> , Flagstaff, USA	Oral en session plénière
Août 2015	<i>IAU General Assembly</i> , Hawaii, USA (3 présentations)	Contribution orale
Mar 2014	<i>Wave-Mean Flow Interactions in Fluids</i> , KITP, USA	
Oct 2013	<i>Canadian Solar Workshop</i> , La petite rouge, Canada	
Juil 09-11-13	<i>Festival de théorie</i> , Aix-en-Provence, France	
Juin 2013	<i>IAUS 300</i> , Paris, France	
Mai 2013	<i>Large eddy simulations of MHD turbulence</i> , Boulder, USA	
Oct 2011	<i>Stellar magnetism and extra-solar planets</i> , OHP, France	
Août 2011	<i>Magnetic fields in stars and exoplanets</i> , Potsdam, Germany	
Feb 2015	<i>CITA</i> , Toronto, Canada	Séminaire
Dec 2014	<i>Lab. de Physique des Plasmas</i> , Ecole polytechnique, France	
Dec 2014	<i>Observatoire de Paris</i> , Meudon, France	
Oct 2013	<i>McGill University</i> , Montréal, Canada	
Déc 2012	<i>Université de Montréal</i> , Canada	
Mar 2012	<i>HAO colloquium</i> , Boulder, USA	

Liste complète des publications

Articles soumis et sous presse

- 2016 Varela, **Strugarek** & Brun, accepté dans *Advances in Space Research*
Differential rotation and magnetism in solar-like stars

Publications avec comité de lecture (11 en premier auteur)

- 2016 **Strugarek et al.**, *Advances in Space Research*, sous press
Modelling turbulent stellar convection zones: sub-grid scales effects
- 2015 **Strugarek et al.**, *The Astrophysical Journal*, **815**, 111
Magnetic games between a planet and its host star: the key role of topology
- 2015 Réville, Brun, **Strugarek**, et al., *The Astrophysical Journal*, **814**, 99
From solar to stellar corona: the role of wind, rotation and magnetism
- 2015 Lawson, **Strugarek*** and Charbonneau, *The Astrophysical Journal*, **813**, 95 *corresponding author
Evidence of active MHD instability inside EULAG-MHD simulations of solar convection
- 2015 Alvan, **Strugarek**, et al., *Astronomy & Astrophysics*, **581**, 112
Characterizing the propagation of gravity waves in 3D nonlinear simulations of solar-like stars
- 2015 **Strugarek**, et al., *Space Weather and Space Climate*, **5**, A4
A Space Weather Mission Concept: Observatories of the Solar Corona and Active Regions (OSCAR)
- 2015 Réville, [...], **Strugarek**, *The Astrophysical Journal*, **798**, 116
The effect of magnetic topology on thermally-driven winds: towards a general formulation of the braking law
- 2014 **Strugarek**, et al. *The Astrophysical Journal*, **795**, 86
On the diversity of magnetic interactions in close-in star-planet systems
- 2014 **Strugarek** & Charbonneau, *Solar Physics*, **289**, 11, 4137
Predictive capabilities of avalanche models for solar flares
- 2014 Aschwanden, [...], **Strugarek**, et al., *Space Science Reviews*, 29
25 Years of Self-Organized Criticality: Solar and Astrophysics
- 2014 **Strugarek**, Charbonneau, et al, *Solar Physics*, **289**, 8, 2993
Deterministically Driven Avalanche Models of Solar Flares
- 2013 Brun, Browning, Dikpati, Hotta and **Strugarek**, *Space Science Reviews*, 1-36
Recent Advances on Solar Global Magnetism and Variability
- 2013 **Strugarek**, et al., *Physical Review Letters*, **111**, 145001
Unraveling quasi-periodic relaxations of transport barriers with gyrokinetic simulations
- 2013 **Strugarek**, et al, *The Astrophysical Journal*, **764**, 189
Magnetic energy cascade in spherical geometry: I. The stellar convective dynamo case
- 2013 **Strugarek**, et al., *Plasma Physics and Controlled Fusion*, **55**, 7
Ion transport barriers triggered by plasma polarization in gyrokinetic simulations
- 2012 Garbet, Abiteboul, **Strugarek**, et al., *Plasma Physics and Controlled Fusion*, **54**, 5
Thermodynamics of neoclassical and turbulent transport
- 2011 **Strugarek**, Brun and Zahn, *Astr. Nach./ AN*, **332**, No. 9/10, 891
Magnetic confinement of the solar tachocline: The oblique Dipole
- 2011 **Strugarek**, Brun and Zahn, *Astronomy & Astrophysics* **532**, 34
Magnetic confinement of the solar tachocline: II. Coupling to a convection zone
- 2011 Abiteboul, [...], **Strugarek**, et al, *Physics of Plasmas*, **18**, 8
Conservation equations and calculation of mean flows in gyrokinetics

Comptes-rendus de conférence (8 en premier auteur)

- 2015 **Strugarek**, et al, *Proceedings de l'IAUS 321 (Assemblée Générale de l'IAU)*,
3D magnetic interactions of stars with their close-in planets
- 2015 **Strugarek**, et al, *Proceedings du FM 1 (Assemblée Générale de l'IAU)*,
Close-in planet migration due to magnetic torques

- 2015 **Strugarek** & Charbonneau, Proceedings du FM 18 (Assemblée Générale de l'IAU),
Predicting large solar flares with data assimilation
- 2014 **Strugarek**, *et al*, Comptes rendus **SF2A-2014**
Modelling the Corona of HD 189733 in 3D
- 2014 **Strugarek**, *et al*, Proceedings of the CoolStars 18 meeting
Numerical aspects of 3D stellar winds
- 2014 **Strugarek**, *et al*, Proceedings of the IAUS300 meeting, **300**, 330
Modelling magnetized star-planet interactions: boundary conditions effects
- 2013 Brun, Alvan, **Strugarek**, Mathis, Garcia, JoP: Conference Series **440**
On gravity waves in the Sun
- 2012 **Strugarek**, Brun and Matt, Comptes rendus **SF2A-2012**, 419
On close-in magnetized star-planet interaction
- 2012 Brun and **Strugarek**, 3rd Hinode Science Meeting, ASP Conf. Series, **454**, 3
Understanding the Solar Inner Magnetism and Dynamics
- 2011 **Strugarek**, Brun and Zahn, Proceedings of the IAU **271**, 399
Magnetic confinement of the solar tachocline: Influence of turbulent convective motions
- 2010 Sarazin, **Strugarek**, *et al.*, Journal of Physics: Conference Series **260**, 2010
Flux-driven gyrokinetic simulations of ion turbulent transport at low magnetic shear

Vulgarisation

- 2014 Wired Science Graphic of the Week (13/11/2014): Magnetic Stars and Planets
- 2012 Sarazin, Grandgirard and **Strugarek**, La Recherche - Supercalculateurs **469**
La Fusion bientôt sous contrôle

Autres publications en physique des plasmas

- 2015 Grandgirard, [...], **Strugarek**, *et al.*, HAL, 2015 <cea-01153011v2>
A 5D gyrokinetic full-f global semi-lagrangian code for flux-driven ion turbulence simulations
- 2014 Ghendrih, [...], **Strugarek**, *et al.*, EPJE, **37**, 27
Fusion plasma turbulence described by modified sandpile dynamics
- 2013 Dumont, Zarzoso, Sarazin, Garbet, **Strugarek**, *et al.*, PPCF, **55**, 12
Interplay between fast ions and turbulence in magnetic fusion plasmas
- 2013 Abiteboul, [...], **Strugarek**, *et al.*, Plasma Physics and Controlled Fusion, **55**, 7
Turbulent momentum transport in core tokamak plasmas and penetration of scrape-off layer flows
- 2013 Zarzoso, [...], **Strugarek**, *et al.*, Physical Review Letters, **110**, 125002
Impact of energetic-particle-driven geodesic acoustic modes on turbulence
- 2012 Ku, [...], **Strugarek**, *et al.*, Nuclear Fusion, **52**, 6
Physics of intrinsic rotation in flux-driven ITG turbulence
- 2011 Sarazin, [...], **Strugarek**, *et al.*, Nuclear Fusion, **51**, 10
Predictions on heat transport and plasma rotation from global gyrokinetic simulations
- 2011 Dif-Pradalier, [...], **Strugarek**, *et al.*, Physics of Plasmas **18**, 6
Neoclassical physics in full distribution function gyrokinetics
- 2010 Dif-Pradalier, [...], **Strugarek**, *et al.*, Physical Review E **82**, 2
On the validity of the local diffusive paradigm in turbulent plasma transport
- 2010 Sarazin, [...], **Strugarek**, *et al.*, Nuclear Fusion, **50**, 5
Large scale dynamics in flux driven gyrokinetic turbulence