Vianney Taquet Curriculum Vitae

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Education

- 2009 – 2012 **PhD in Astrophysics**, Institut de Planétologie et d'Astrophysique de Grenoble (IPAG), Université de Grenoble, France.
- 2008 - 2009 **Second year of Master's degree in Fundamental Physics: Astronomy and Astrophysics**, Observatoire de Paris, France, *honors*.
- 2007 - 2008 **First year of Master's degree in Fundamental Physics**, Université Paris-Sud, Orsay, France, *honors*.
- 2006 – 2007 **Licence's degree in Fundamental Physics**, Université Paris-Sud, Orsay, France, *honors*.
- 2004 – 2006 ***Classes Préparatoires aux Grandes Ecoles d'Ingénieur*, Option: Physics & Chemistry**, Lycée Faidherbe, Lille, France.
- 2004 **Scientific Baccalaureate**, Lycée Faidherbe, Lille, France, *honors*.

Employment

- 01/2015 – present **Postdoctoral Research Fellow**, *Leiden Observatory, The Netherlands*
- 02/2013 – 12/2014 **NASA Postdoctoral Program Research Fellow**, *NASA Goddard Space Flight Center, Greenbelt, Maryland, USA*
  PI of research programme entitled *Deuterium fractionation of interstellar organic molecules: a clue for the origin of meteoritic amino-acids*
- 10/2012 – 12/2012 **Postdoctoral Research Fellow**, *Institut de Planétologie et d'Astrophysique de Grenoble (IPAG), France*
- 09/2009 – 09/2012 **PhD student**, *Institut de Planétologie et d'Astrophysique de Grenoble (IPAG), France*
  Thesis title: *Grain surface chemistry in low-mass star-forming regions.*
  Advisors: Cecilia Ceccarelli and Claudine Kahane (IPAG)
- 04/2009 – 07/2009 **MSc Internship**, *Laboratoire d'Etudes du Rayonnement et de la Matière (LERMA), Paris, France*
  Subject: *Molecular Signatures of Protostellar Jets*
  Advisors: Sylvie Cabrit (LERMA) and Guillaume Pineau-des-Forets (IAS)
- 04/2008 – 07/2008 **MSc Internship**, *Center of Astrophysics and Supercomputing, Swinburne University, Melbourne, Australia*
  Subject: *Physical Chemistry of Protoplanetary Dust Formation*
  Advisors: Sarah Maddison and Geoff Brooks (Swinburne University)
- 05/2007 – 08/2007 **BSc Internship**, *Laboratoire d'Etudes Spatiales et d'Instrumentation en Astrophysique (LESIA), Meudon, France*
  Subject: *Relationships between the Magnetic Field of the Sun and its Flares*
  Advisors: Nicole Vilmer and Véronique Bommier (LESIA)

Technical Skills

- **Astrophysics** Gas-grain astrochemical modelling, sub-mm (single-dish and interferometric) observations, dynamics of low-mass star formation
- **Chemistry** Physical and chemical processes of heterogeneous ices, chemical networks, modelling of ice analogs
- **Programming** Fortran, C, Python, basics in shell
- **Softwares** IDL, GILDAS, LaTeX, Office, Open Office, Adobe suite, Gnuplot, Gimp

Awards and Professional Activities

- **Awards**

09/2012 NASA Postdoctoral Program fellowship

01/2012 Best press release article awarded at the "SASP 2012" conference

- **Referee for scientific journals**

2013 - present Astronomy and Astrophysics, The Astrophysical Journal, Monthly Notices of the Royal Astronomical Society, Molecular Astrophysics

- **Teaching and Student Mentoring**

2016 - present Day-to-day supervisor of the MSc student, Neilufar Khorshid, for her research project entitled *Chemical signatures of episodic accretion in embedded protostars*

2016 Supervisor of the LEAPS student, Umut Kavak, for his 3-month research project entitled *Chemical complexity in protostellar outflows*

2015 - 2016 Coordinator of the LEAPS (Leiden/ESA Astrophysics Programme for Summer Students) 2016 Program

2015 - 2016 Day-to-day supervisor of the MSc student, Andrew Barr, for his research project entitled *ALMA observations of complex organics in the high-mass protostar AFGL 4176*

2015 Supervisor of the LEAPS student, Kerry Ballantine, for her 3-month research project entitled *Understanding the formation of complex organics in star-forming regions*

2010 - 2011 Introductory programming with Maple : 1st year university level, 30 hours.

2009 - 2012 Seminars of Molecular Astrophysics to College and Master classes.

- **Conference and Seminar Organisation**

2016 Co-organiser of the EWASS2016 Symposium "Interstellar dust and gas coupling"

2015 - present Organisation of the Astrochem Seminars of the Leiden Observatory

2010 Webmaster for the "COST Action Annual" conference

2011 Webmaster for the "SASP 2012" conference

Complementary Information

- **Languages** French (mother tongue), English (fluent), Spanish (scholar level)
- **Leisure activities** Running, mountain-biking, skiing, soccer, cinema, traveling

List of publications

[22] C. Codella, C. Ceccarelli, E. Bianchi, L. Podio, R. Bachiller, B. Lefloch, F. Fontani, **V. Taquet**, L. Testi 2016, *Hot and dense water in the inner 25 au of SVS13-A*, MNRAS, 462, L75 [URL]

[21] **V. Taquet**, K. Furuya, C. Walsh, E. F. van Dishoeck *A primordial origin for molecular oxygen in comets: A chemical kinetics study of the formation and survival of O_2 ice from clouds to disks*, accepted for publication in MNRAS [URL]

[20] O. Sipil'ä, P. Caselli, **V. Taquet** 2016, *Effect of multilayer ice chemistry on gas-phase deuteration in starless cores*, A&A, 591, 9 [URL]

[19] **V. Taquet**, E. Wirstrom, S. B. Charnley 2016, *Formation and recondensation of complex organic molecules during protostellar luminosity outbursts*, ApJ, 821, 46 [URL]

[18] D. Quenard, **V. Taquet**, C. Vastel, P. Caselli, C. Ceccarelli 2015, *Detectability of deuterated water in prestellar cores* 2016, A&A, 585, A36 [URL]

[17] N. Balucani, C. Ceccarelli, **V. Taquet** 2015, *New routes of gas-phase formation of complex organic molecules in cold gas*, MNRAS, 449, L16 [URL]

[16] **V. Taquet**, A. Lopez-Sepulcre, C. Ceccarelli, R. Neri, C. Kahane, S. B. Charnley 2015, *Constraining the abundances of complex organics in the inner regions of solar-type protostars*, ApJ, 804, 81 [URL]

[15] A. Rimola, **V. Taquet**, P. Ugliengo, N. Balucani, C. Ceccarelli, 2014, *A combined quantum chemical and modelling study of CO hydrogenation on water ice*, A&A 572, A70 [URL]

[14] A. Coutens, J. Jørgensen, M. Persson, E. van Dishoeck, C. Vastel, **V. Taquet** 2014, *High D_2O/HDO ratio in the inner regions of the low-mass protostar NGC1333 IRAS2A*, A&A, 792, L5 [URL]

[13] **V. Taquet**, S. B. Charnley, O. Sipilä 2014, *Multilayer Formation and Evaporation of Deuterated Ices in Prestellar and Protostellar Cores*, ApJ, 791, 1 [URL]

[12] N. Sakai, T. Sakai, T. Hirota, Y. Watanabe, C. Ceccarelli, C. Kahane, S. Bottinelli, E. Caux, K. Demyk, C. Vastel, A. Coutens, **V. Taquet**, N. Ohashi, S. Takakuwa, Y. Shigehisa, H-W. Yen, Y. Aikawa, S. Yamamoto 2013, *Change in the chemical composition of infalling gas forming a disk around a protostar*, Nature, 507, 7490 [URL]

[11] A. Coutens, C. Vastel, S. Cabrit, C. Codella, L. E. Kristensen, C. Ceccarelli, E. van Dishoeck, A. C. A. Boogert, S. Bottinelli, A. Castets, E. Caux, C. Comito, K. Demyk, F. Herpin, B. Lefloch, C. McCoey, J. C. Mottram, B. Parise, **V. Taquet**, F. F. S. van der Tak, R. Visser, U. A. Yildiz 2013, *Deuterated water in the solar-type protostars NGC 1333 IRAS 4A and IRAS 4B*, A&A, 560, A39 [URL]

[10] A. López-Sepulcre, **V. Taquet**, A. Sánchez-Monge, C. Ceccarelli, C. Dominik, F. Fontani, P.T.P. Ho, C. Kahane, M. Kama, R. Neri 2013, *High angular resolution observations towards OMC-2 FIR 4: Dissecting an intermediate-mass protocluster*, A&A, 556, A62 [URL]

[9] **V. Taquet**, A. Lopez-Sepulcre, C. Ceccarelli, R. Neri, C. Kahane, A. Coutens, C. Vastel 2013, *Water deuterium fractionation in the inner regions of two low-mass protostars*, ApJL, 768, L29 [URL]

[8] A. Coutens, C. Vastel, S. Cazaux, S. Bottinelli, E. Caux, C. Ceccarelli, K. Demyk, **V. Taquet**, V. Wakelam 2013, *Heavy water stratification in a low-mass protostar*, A&A, 553, A75 [URL]

[7] **V. Taquet**, P. Peters, C. Kahane, C. Ceccarelli, D. Duflot, C. Toubin, A. Faure, L. Wiesenfeld 2013, *Modelling of deuterated water ice formation*, A&A, 550, A127 [URL]

[6] C. Codella, C. Ceccarelli, B. Lefloch, F. Fontani, G. Busquet, P. Caselli, C. Kahane, **V. Taquet**, M. Vasta, S. Viti, L. Wiesenfeld 2012, *Fossile deuteration in the protostellar shock L1157-B1*, ApJL, 757, L9 [URL]

[5] A. Bacmann, **V. Taquet**, A. Faure, C. Kahane, C. Ceccarelli 2012, *Detection of complex organic molecules in a prestellar core: a new challenge for astrochemical models*, A&A, 541, L12 [URL]

[4] **V. Taquet**, C. Ceccarelli, C. Kahane 2012, *Formaldehyde and methanol deuteration in protostars: fossiles from a past fast high density pre-collapse phase*, ApJL, 748, L3 [URL]

[3] **V. Taquet,** C. Ceccarelli, C. Kahane 2012, *Multilayer modeling of grain porous surface chemistry I. The GRAINOBLE code*, A&A, 538, 42 [URL]

[2] A. Ratajczak, **V. Taquet**, C. Kahane, C. Ceccarelli, A. Faure, E. Quirico 2011, *The puzzling deuteration of methanol in low- to high- mass protostars*, A&A, 528, 13 [URL]

[1] F. Pignatale, S. Maddison, **V. Taquet**, G. Brooks, K. Liffman 2011, *The effect of the regular solution model in the condensation of protoplanetary dust*, MNRAS, 506 [URL]

Conference talks

- 10/2016 *A primordial origin for O_2 in comets*, Contributed talk, "Astrolille PCMI 2016" (Lille, France)
- 10/2016 *Theoretical fractionation in Young Stellar Objects*, Invited talk, "Fractionation of isotopologues in space" (Arcetri, Italy)
- 10/2016 *Astrochemical models in the JWST Era*, Invited talk, "The Ice Age" Lorentz Workshop (Leiden, The Netherlands)
- 04/2016 *A primordial origin for O_2 in comets*, Contributed talk, "Water in the Universe" (ESTEC, Noordwijk, The Netherlands)
- 10/2015 *Formation and recondensation of complex organics during luminosity outbursts*, Contributed talk, "From clouds to protoplanetary disks: the astrochemical link" (Berlin, Germany)
- 05/2015 *Formation and recondensation of complex organics during luminosity outbursts*, Contributed talk, "KIDA 2015 Workshop" (CNES, Paris, France)
- 08/2014 *Multiphase models*, Invited talk, "Grain Surface Networks and Data for Astrochemistry" (Lorentz Center, Leiden, The Netherlands)
- 04/2013 *Ice deuteration: models and observations to interpret the protostar history*, "From Stars to Life 2013" (Gainesville, FL, USA)
- 11/2012 *Ice deuteration: models and observations to interpret the protostar history*, "Physique et Chimie du Milieu Interstellaire" (Paris, France)
- 10/2012 *Ice deuteration: models and observations to interpret the protostar history*, Invited talk, "Workshop on Interstellar Matter 2012" (Sapporo, Japan)
- 10/2012 *Ice deuteration: models and observations to interpret the protostar history*, "COST Action Annual Conference 2012" (Catania, Italy)
- 07/2012 *The GRAINOBLE model interpretation of deuterated water observed by Herschel*, "EWASS 2012: The astrochemical universe unveiled with Herschel" (Rome, Italy)

Seminars

- 02/2016 *Chemical complexity in star-forming regions: towards a new paradigm?*, IPAG (Grenoble, France)
- 01/2016 *Chemical complexity in star-forming regions: towards a new paradigm?*, Arcetri Observatory (Italy)
- 02/2015 *Chemical complexity at the early stages of star formation*, Astrochem seminar series (Leiden Observatory)
- 02/2015 *Chemical complexity at the early stages of star formation*, The University of Tokyo
- 10/2014 *Interferometric observations and astrochemical modelling of complex organics around low-mass protostars*, IR/submm/mm Sack Lunch Series (Caltech)
- 12/2013 *Chemical evolution at the early stages of low-mass star formation: deuteration and chemical complexity*, UVa / NRAO Astronomy (TUNA) Lunch Talks (Charlottesville)
- 11/2013 *Water and organics around low-mass protostars: deuteration and chemical complexity*, Department of Astronomy, The University of Maryland
- 04/2013 *Ice deuteration: models and observations to interpret the protostar history*, Solar System Exploration Seminar, NASA Goddard Space Flight Center

Accepted proposals for observations

- 08/2016 - ALMA — *Linking interstellar and cometary O_2: A deep search for $^{16}O^{18}O$ in a Solar System precursor* (A rated)
- 03/2015 - IRAM 30m — *Chemical signatures of episodic luminosity outbursts in embedded protostars* (A rated)
- 09/2014 - IRAM 30m — *Deuteration and chemical complexity induced by efficient ice evaporation in Barnard 5* (B rated)
- 07/2014 - NRO 45m — *Deuteration and chemical complexity induced by efficient ice evaporation in Barnard 5*
- 04/2014 - APEX — *Probing the molecular content of southern FUor sources*
- 03/2014 - IRAM 30m — *Spatial distribution and physical properties of a low-mass protostellar outflow* (B rated)
- 03/2010 - IRAM PdBi — *Methyl formate and methanol: two key complex organic molecules* (B rated)