

# 2019年 2月 第4週 新着論文サーベイ

2月18日(月曜日)

## [1] [arXiv:1902.05931](#)

Title: "Properties of meteors with double peaked light curves"

Author: Dilini Subasinghe, Margaret Campbell-Brown

Comments: Accepted January 31, 2019 to Monthly Notices of the Royal Astronomical Society

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

21の小惑星にはライトカーブに2つのピークを持つことがわかっている。シャープなダブルピークとスムーズなダブルピークがあるが、前者は小惑星軌道の天体によるものか、明らかに分裂が見られるものによる。後者は彗星のような隕石によるもので、確認できない分裂を起こしている可能性もある。

## [2] [arXiv:1902.05859](#)

Title: "Circular spectropolarimetric sensing of vegetation in the field; possibilities for the remote detection of extraterrestrial life"

Author: C.H. Lucas Patty, Inge Loes ten Kate, Wybren Jan Buma, Rob J.M. van Spanning, Gábor Steinbach, Freek Ariese, Frans Snik

Comments: 24 pages, 6 figures

Subjects: Earth and Planetary Astrophysics (astro-ph.EP); Biological Physics (physics.bio-ph); Biomolecules (q-bio.BM)

[理論/観測/実験 etc....]

Homochirality はすべての生化学的な生命において一般に持つ特質であり、それによる円偏光は biosignature となる。高精度の円偏光スペクトルを実験室で得るのは簡単だが、地表では明るさやターゲットの動きの変化により容易ではない。今回地上の様々なターゲットに対して、数キロメートルまでの範囲で円偏光スペクトルを得た。光合成をする生命は非生物と非常に分別しやすいことがわかった。ゆくゆくはリモート円偏光観測で地球外生命を検知したい。

## [3] [arXiv:1902.05585](#)

Title: "Nitrogen-containing Anions and Tholin Growth in Titan's Ionosphere: Implications for Cassini CAPS-ELS Observations"

Author: David Dubois, Nathalie Carrasco, Jérémy Bourgalais, Ludovic Vettier, Ravindra T. Desai, Anne Wellbrock, Andrew J. Coates

Comments: 8 pages, 2 figures, accepted for publication in the Astrophysical Journal Letters

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Cassini のその場観測からタイタンの電離圏では炭化水素系やシアン系の陰イオンが予測されていたより多く存在していた。他にどのような物質があるかまだわかっていないので、タイタンの電離圏を模した実験室でどのような種が作ら

れるか調べた。

[4] [arXiv:1902.05574](#)

Title: "A Consistent Reduced Network for HCN Chemistry in Early Earth and Titan Atmospheres: Quantum Calculations of Reaction Rate Coefficients"

Author: Ben K. D. Pearce, Paul W. Ayers, Ralph E. Pudritz

Comments: 34 pages, 8 figures, 14 tables, accepted for publication in J Phys Chem A

Subjects: Earth and Planetary Astrophysics (astro-ph.EP); Atmospheric and Oceanic Physics (physics.ao-ph); Chemical Physics (physics.chem-ph)

[理論/観測/実験 etc....]

HCN は核酸塩基とアミノ酸といった、バイオ分子の結合に重要な材料となる。初期地球やタイタンの大気の HCN 生成を想定して 42 の反応係数をダイレクトに算出した。

[5] [arXiv:1902.05598](#)

Title: "A theoretical model for realistic local climates"

Author: Gabriele Di Bona, Andrea Giacobbe

Comments: 19 pages, 12 figures

Subjects: Atmospheric and Oceanic Physics (physics.ao-ph); Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

ローカルな気候変化 (主に温度) のより現実的なモデルを作りたい。多くのタイプのローカル気候を通して物理モデルを立てて実際の気候データと比較した。

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## 2 月 19 日 (火曜日)

[1] [arXiv:1902.06018](#)

Title: "An alternative interpretation of the exomoon candidate signal in the combined Kepler and Hubble data of Kepler-1625"

Author: René Heller, Kai Rodenbeck, Giovanni Bruno

Comments: 8 pages, 5 figures (4 col, 1 b/w), submitted to A&A on 18 Dec 2018, this version after the first iteration with the referee

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[観測]

Kepler と Hubble の観測で系外惑星 Kepler-1625b に海王星サイズの系外衛星の存在が示唆されているが、初の系外衛星検出&巨大な衛星半径ということから、観測データと Bayesian Information Criterion(BIC) の再検証を行った。Kepler と Hubble のデータに対して synchronous polynomial detrending 処理を行い、惑星のみのモデルと惑星と衛星のモデルについて 500 万の乱数を生成して BIC 偏差 (DeltaBIC) を計算した。Kepler/Hubble データによくわからない systematic error があるせいで、系外衛星モデルの尤度が低くなってしまっているらしい。

[2] [arxiv:1902.06004](#)

Title: "The SOPHIE search for northern extrasolar planets. XIV. A temperate ( $T_{\text{eq}} \sim 300$  K) super-earth around the nearby star Gliese 411"

Author: R. F. Díaz, X. Delfosse, M. J. Hobson, I. Boisse, N. Astudillo-Defru, X. Bonfils, G. W. Henry, L. Arnold, F. Bouchy, V. Bourrier, B. Brugger, S. Dalal, M. Deleuil, O. Demangeon, F. Dolon, X. Dumusque, T. Forveille, N. Hara, G. Hébrard, F. Kiefer, T. Lopez, L. Mignon, F. Moreau, O. Mousis, C. Moutou, F. Pepe, S. Perruchot, Y. Richaud, A. Santerne, N. C. Santos, R. Sottile, M. Stalport, D. Ségransan, S. Udry, N. Unger

Comments: Accepted for publication in Astronomy & Astrophysics. 17 pages, 15 figures (plus Appendices)

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[観測]

SOPHIE 分光器を使った観測で、近傍の M 型星 GL411 周りに 12.95 日周期のシグナルを検出した。解析の結果、軌道半径 0.079au で地球質量くらいの惑星 Gl411b の存在が示唆された。有効温度は 255 - 350K で、ハビタブルには暑すぎる。ちなみに地球からの距離は 2.5pc で、3 番目に近い低質量形骸惑星である。

[3] [arxiv:1902.05998](#)

Title: "The SOPHIE search for northern extrasolar planets XV. A Warm Neptune around the M-dwarf Gl378"

Author: M. J. Hobson, X. Delfosse, N. Astudillo-Defru, I. Boisse, R. F. Díaz, F. Bouchy, X. Bonfils, T. Forveille, L. Arnold, S. Borgniet, V. Bourrier, B. Brugger, N. Cabrera Salazar, B. Courcol, S. Dalal, M. Deleuil, O. Demangeon, X. Dumusque, N. Hara, G. Hébrard, F. Kiefer, T. Lopez, L. Mignon, G. Montagnier, O. Mousis, C. Moutou, F. Pepe, J. Rey, A. Santerne, N. C. Santos, M. Stalport, D. Ségransan, S. Udry, P. A. Wilson

Comments: 10 pages, 8 figures, accepted for publication in A&A

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[観測]

前の論文と同じシリーズ。Haute-Provence 天文台の SOPHIE 分光器で、M 型星 Gl378 周りに warm Neptune を発見した。惑星 Gl378b は質量  $13.02M_E$ 、軌道周期 3.82days で、Hot Neptune desert の境界の下に位置している。

[4] [arxiv:1902.06556](#)

Title: "Contrasting turbulence in stably stratified flows and thermal convection"

Author: Mahendra K. Verma

Comments: to appear in Physica Scripta

Subjects: Fluid Dynamics (physics.flu-dyn); Earth and Planetary Astrophysics (astro-ph.EP); Solar and Stellar Astrophysics (astro-ph.SR)

[理論]

安定階層乱流 (stably stratified turbulence: SST) と乱流熱対流の比較をした。これらの一番の違いは浮力で運動エネルギーが供給されるかされないからしい。詳細はよくわかりませんでした。

[5] [arxiv:1902.06438](#)

Title: "Rotational Desorption of Ice Mantles and Complex Molecules from Suprathermally Rotating Dust Grains around Young Stellar Objects"

Author: Thiem Hoang, Le Ngoc Tram

Comments: 15 pages, 12 figures; comments welcome

Subjects: Astrophysics of Galaxies (astro-ph.GA); Earth and Planetary Astrophysics (astro-ph.EP); Solar and Stellar Astrophysics (astro-ph.SR)

[理論]

複雑有機物分子 (complex organic molecules: COMs) は原始惑星系円盤などの若年天体 (YSOs) 周辺で観測される。COMs はダスト粒子の氷マントルで生成したのち、恒星からの輻射によって温度が 100K を超えると昇華してガス中に放出されると考えられている。この論文では、100K 未満の低温でも COMs を放出できる機構を考えた。(1) 輻射トルクで自転速度が上昇したダスト粒子が遠心力でちぎれる。(2) thermal spike(?) によって小さいかけらから COMs と水が蒸発する。1-100um の大きいアグリゲイトは輻射トルク崩壊 (RATD) 機構によって小さい氷粒子に分裂し、その後 COMs の放出が起こりうるということがわかった。

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## 2月20日(水曜日)

[1] [arxiv:1902.07191](#)

Title: "PDS 70: A transition disk sculpted by a single planet"

Author: Dhruv Muley, Jeffrey Fung, Nienke van der Marel

Comments: ApJL submitted. Comments and questions welcome. v2: updated citations

Subjects: Earth and Planetary Astrophysics (astro-ph.EP); Solar and Stellar Astrophysics (astro-ph.SR)

[理論/観測/実験 etc....]

Comment!!!!

[2] [arxiv:1902.07089](#)

Title: "Planetesimal Population Synthesis: Pebble Flux Regulated Planetesimal Formation"

Author: Christian T. Lenz, Hubert Klahr, Tilman Birnstiel

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

[3] [arxiv:1902.07010](#)

Title: "Mesoscale modeling of Venus' bow-shape waves"

Author:Maxence Lefèvre, Aymeric Spiga, Sébastien Lebonnois

Comments: 25 pages and 16 figures

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

[4] [arxiv:1902.06832](#)

Title: "Tropical and Extratropical General Circulation with a Meridional Reversed Temperature Gradient as Expected in a High Obliquity Planet"

Author:Wanying Kang, Ming Cai, Eli Tziperman

Subjects: Earth and Planetary Astrophysics (astro-ph.EP); Atmospheric and Oceanic Physics (physics.ao-ph)

[理論/観測/実験 etc....]

Comment!!!!

[5] [arxiv:1902.06784](#)

Title: "Multiverse Predictions for Habitability: Number of Habitable Planets"

Author:McCullen Sandora

Comments: 43 pages, 5 figures and 9 tables

Subjects: Earth and Planetary Astrophysics (astro-ph.EP); Cosmology and Nongalactic Astrophysics (astro-ph.CO)

[理論/観測/実験 etc....]

Comment!!!!

[6] [arxiv:1902.07092](#)

Title: "pizza: An open-source pseudo-spectral code for spherical quasi-geostrophic convection"

Author:T. Gastine

Comments: 20 pages, 10 figures, 4 tables, accepted for publication in GJI

Subjects: Fluid Dynamics (physics.flu-dyn); Earth and Planetary Astrophysics (astro-ph.EP); Computational Physics (physics.comp-ph); Geophysics (physics.geo-ph)

[理論/観測/実験 etc....]

Comment!!!!

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2月21日(木曜日)

[1] [arxiv:1902.07666](#)

Title: "The environmental effects of very large bolide impacts on early Mars explored with a hierarchy of numerical models"

Author: Martin Turbet, Cédric Gillmann, François Forget, Baptiste Baudin, Ashley Palumbo, James Head, Özgür Karatekin

Comments: Submitted to Icarus. Abstract significantly abridged to meet ArXiv size limit

Subjects: Earth and Planetary Astrophysics (astro-ph.EP); Atmospheric and Oceanic Physics (physics.ao-ph);  
Geophysics (physics.geo-ph)

[理論/観測/実験 etc....]

Comment!!!!

[2] [arxiv:1902.07639](#)

Title: "A highly structured disk around the planet host PDS 70 revealed by high-angular resolution observations with ALMA"

Author: M. Keppler, R. Teague, J. Bae, M. Benisty, T. Henning, R. van Boekel, E. Chapillon, P. Pinilla, J. P. Williams, G. H.-M. Bertrang, S. Facchini, M. Flock, Ch. Ginski, A. Juhasz, H. Klahr, Y. Liu, A. Mueller, L. M. Perez, A. Pohl, G. Rosotti, M. Samland, D. Semenov

Comments: Accepted for publication in A&A

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

[3] [arxiv:1902.07600](#)

Title: "A census of  $\rho$ -Oph candidate members from gaia DR2"

Author: H. Cánovas, C. Cantero, L. Cieza, A. Bombrun, U. Lammers, B. Merín, A. Mora, Á. Ribas, D. Ruíz-Rodríguez

Comments: Submitted to A&A. Abridged abstract

Subjects: Earth and Planetary Astrophysics (astro-ph.EP); Astrophysics of Galaxies (astro-ph.GA); Solar and Stellar Astrophysics (astro-ph.SR)

[理論/観測/実験 etc....]

Comment!!!!

[4] [arxiv:1902.07484](#)

Title: "Chemical connections between low-mass stars and planets building blocks investigated by stellar population synthesis"

Author: Cabral Nahuel, Nadège Lagarde, Céline Reylé, Aurélie Guilbert-Lepoutre, Annie C. Robin

Comments: 4 pages, 3 figures, conference

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

[5] [arxive:1902.07475](#)

Title: "Luminosity outburst chemistry in protoplanetary discs: going beyond standard tracers"

Author: Dmitri S. Wiebe, Tamara S. Molyarova, Vitaly V. Akimkin, Eduard I. Vorobyov, Dmitry A. Semenov

Comments: Accepted to MNRAS

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

[6] [arxive:1902.07294](#)

Title: "Jupiter's Ammonia Distribution Derived from VLA Maps at 3–37 GHz"

Author: I. de Pater, R.J. Sault, M.H. Wong, L.N. Fletcher, D. DeBoer, B. Butler

Comments: 35 pages, 17 figures, published in Icarus

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

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## 2月22日(金曜日)

[1] [arxive:1902.08092](#)

Title: "A Fast Approximate Approach to Microlensing Survey Analysis"

Author: Somayeh Khakpash, Matthew Penny, Joshua Pepper

Comments: 18 pages, 14 figures, Submitted to AAS journals

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

[2] [arxive:1902.08022](#)

Title: "Hydrogen Cyanide in Nitrogen-Rich Atmospheres of Rocky Exoplanets"

Author: Paul B. Rimmer, Sarah Rugheimer

Comments: 20 pages, 8 figures, accepted for publication in Icarus

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

[3] [arXiv:1902.07950](#)

Title: "Comparative analysis of the influence of Sgr A\* and nearby active galactic nuclei on the mass loss of known exoplanets"

Author: Agata M. Wisłocka, Andjelka B. Kovačević, Amedeo Balbi

Comments: Accepted for publication in Astronomy & Astrophysics

Subjects: Earth and Planetary Astrophysics (astro-ph.EP); High Energy Astrophysical Phenomena (astro-ph.HE)

[理論/観測/実験 etc....]

Comment!!!!

[4] [arXiv:1902.07944](#)

Title: "Low albedos of hot to ultra-hot Jupiters in the optical to near-infrared transition regime"

Author: M. Mallonn, J. Köhler, X. Alexoudi, C. von Essen, T. Granzer, K. Poppenhaeger, K.G. Strassmeier

Comments: accepted for publication in A&A

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

[5] [arXiv:1902.07772](#)

Title: "Global seasonal variations of the near-surface relative humidity levels on present-day Mars"

Author: B. Pál, Á. Kereszturi, F. Forget, M. D. Smith

Comments: 25 pages, 20 figures, revision under review in Icarus

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

[6] [arXiv:1902.07746](#)

Title: "The equilibrium size-frequency distribution of small craters reveals the effects of distal ejecta on lunar landscape morphology"

Author: David A. Minton, Caleb I. Fassett, Masatoshi Hirabayashi, Bryan A. Howl, James E. Richardson

Comments: 43 pages, 18 figures, 1 table

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!



[7] [arXiv:1902.07740](#)

Title: "Nitrogen Oxide Concentrations in Natural Waters on Early Earth"

Author: Sukrit Ranjan, Zoe R. Todd, Paul B. Rimmer, Dimitar D. Sasselov, Andrew R. Babbin

Comments: In review for publication at Geochemistry, Geophysics, and Geosystems (G-cubed). Comments, questions, and criticism solicited; please contact corresponding author at sukrit@mit.edu. SI at: this [https URL](#) GitHub at: this [https URL](#)

Subjects: Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

[8] [arXiv:1902.08035](#)

Title: "Introduction: Detectability of Future Earth"

Author: Jacob Haqq-Misra

Comments: Introduction to the special issue on the Detectability of Future Earth, published in Futures (volume 106, pages 1-44)

Subjects: General Physics (physics.gen-ph); Earth and Planetary Astrophysics (astro-ph.EP); Popular Physics (physics.pop-ph)

[理論/観測/実験 etc....]

Comment!!!!

[9] [arXiv:1902.07729](#)

Title: "Ultra-Stable Environment Control for the NEID Spectrometer: Design and Performance Demonstration"

Author: Paul Robertson, Tyler Anderson, Gudmundur Stefansson, Frederick R. Hearty, Andrew Monson, Suvrath Mahadevan, Scott Blakeslee, Chad Bender, Joe P. Ninan, David Conran, Eric Levi, Emily Lubar, Amanda Cole, Adam Dykhouse, Shubham Kanodia, Colin Nitroy, Joseph Smolsky, Demetrius Tuggle, Basil Blank, Matthew Nelson, Cullen Blake, Samuel Halverson, Chuck Henderson, Kyle F. Kaplan, Dan Li, Sarah E. Logsdon, Michael W. McElwain, Jayadev Rajagopal, Lawrence W. Ramsey, Arpita Roy, Christian Schwab, Ryan Terrien, Jason T. Wright

Comments: Accepted for publication in JATIS

Subjects: Instrumentation and Methods for Astrophysics (astro-ph.IM); Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

[10] [arxiv:1902.07723](https://arxiv.org/abs/1902.07723)

Title: "Discovery of a directly imaged disk in scattered light around the Sco-Cen member Wray 15-788"

Author: A. J. Bohn, M. A. Kenworthy, C. Ginski, M. Benisty, J. de Boer, C. U. Keller, E. E. Mamajek, T. Meshkat, G. A. Muro-Arena, M. J. Pecaut, F. Snik, S. G. Wolff, M. Reggiani

Comments: Accepted for publication in A&A (17 pages, 11 figures)

Subjects: Solar and Stellar Astrophysics (astro-ph.SR); Earth and Planetary Astrophysics (astro-ph.EP)

[理論/観測/実験 etc....]

Comment!!!!

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Nature

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Science

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