

2017年 1月 第1週 新着論文サーベイ

1月2日(月曜日)

[1] [arxiv:1612.09396](#)

Title: "Simulated Space Weathering of Fe- and Mg-rich Aqueously Altered Minerals Using Pulsed Laser Irradiation"

Author: H. M. Kaluna, H. A. Ishii, J. P. Bradley, J. J. Gillis-Davis, P. G. Lucey

Comments: 27 Pages, 4 tables, 10 figures

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

[理論/観測/実験 etc....]

Comment!!!!

[2] [arxiv:1612.09324](#)

Title: "Characterization of the Wolf 1061 Planetary System"

Author: Stephen R. Kane, Kaspar von Braun, Gregory W. Henry, Miranda A. Waters, Tabettha S. Boyajian, Andrew W. Mann

Comments: 11 pages, 10 figures, accepted for publication in the Astrophysical Journal

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

[理論/観測/実験 etc....]

Comment!!!!

1月3日(火曜日)

[1] [arxiv:1701.00471](#)

Title: "An analytical model of crater count equilibrium"

Author: Masatoshi Hirabayashi, David A. Minton, Caleb I. Fassett

Comments: 24 pages, 9 figures, accepted for publication in Icarus

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

[理論/crater count 平衡]

Crater count 平衡: クレーターの形成・消失率が一致した状況のこと。

今回は、クレーターに覆われた天体表面状態の解析計算。cookie-cutting(単にクレーターが幾何学的に重なる状況)、噴出物がおおう状態、そして拡散的に浸食していく状態などを考慮。

[2] [arxiv:1701.00367](#)

Title:

”The color-magnitude distribution of Hilda asteroids: Comparison with Jupiter Trojans”

Author: Ian Wong, Michael E. Brown

Comments: 7 pages, 6 figures, accepted for publication in AJ

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

[観測/ヒルダ群小惑星の色分布]

ヒルダ群：小惑星帯の外縁部 (3.7-4.2AU) に存在する小惑星群。木星に対して 2:3 の軌道共鳴の位置にある。色分布などを調査。

Spectral slope は bimodal な分布をしている。

Trojan 群と似ていることがわかり、共通の起源を持つ可能性などを議論。

[3] [arxiv:1701.00318](#)

Title: ”Sulfur Hazes in Giant Exoplanet Atmospheres: Impacts on Reflected Light Spectra”

Author: Peter Gao, Mark S Marley, Kevin Zahnle, Tyler D Robinson, Nikole K Lewis

Comments: 15 pages, 8 figures, 1 table, submitted to ApJ

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

[理論/ガス惑星大気中の硫黄ヘイズ]

H₂S の光反応により形成される硫黄ヘイズが、ガス惑星大気中に存在することが近年示唆されている。

今回：雲・ヘイズ入り放射平衡モデルを使い、スペクトルへの影響、WFIRST での観測可能性など調査。

木星質量の惑星の場合、100-1mbar の待機中で、S₈ のヘイズが 1 ppmv 程度生成。

一般の clear な大気の場合、0.5-1μm は分子の吸収が乗るが、硫黄のヘイズがあると散乱によりアルベドが 0.7 程度まで引き上げられる。

一方で 0.4μm より短波長では、ヘイズ粒子の強い吸収によりアルベドは 0.1 以下。この結果、大気が青からオレンジ色に変化。

WFIRST でも十分な観測可能性あり。(ただし、0.4μm の吸収は水氷、KCl/ZnS 雲などとも縮退するので注意。)

[4] [arxiv:1701.00256](#)

Title: ”The Geometric Magnitude and Albedo for the Globe of Saturn”

Author: Anthony Mallama, Hristo Pavlov

Comments: 20 pages, 3 figures, 3 tables

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

[観測/明るさ&アルベド分布]

土星の明るさやアルベドの分布は Mallama et al. 2017 によって決められた。しかし ring の影響などが効いていたので、今回再解析をまとめた。

[5] [arxiv:1701.00012](#)

Title: ”Challenges to Constraining Exoplanet Masses via Transmission Spectroscopy”

Author: Natasha E. Batalha, Eliza M.-R. Kempton, Rostom Mbarek

Comments: 6 pages, 3 figures, submitted to ApJL

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

[観測/透過光スペクトルと惑星質量]

de Wit Seager 2013 で、透過光スペクトルからトランジット惑星の質量を算出する方法 (MassSpec) が提唱された。

その精度は、大気スケールハイト (=> 吸収 feature に反映) から求められる表面重力の値による。

今回は将来の観測への適応も見据え、RV 法での質量決定の難易度が高い低質量の惑星に適応した計算を行う。

結果、惑星質量と組成などの間に縮退があることも見えてきた。

1 月 4 日 (水曜日)

[1] [arxiv:1701.00750](https://arxiv.org/abs/1701.00750)

Title: "Near-infrared scattered light properties of the HR4796A dust ring: a measured scattering phase function from 13.6deg to 166.6deg"

Author: Julien Milli, Arthur Vigan, David. Mouillet, Anne-Marie Lagrange, Jean-Charles Augereau, Christophe Pinte, Dimitri Mawet, Hans Martin Schmid, Anthony Boccaletti, Gael Chauvin, Luca Matra, Quentin Kral, Andreas Bazzon, Francois Menard, Jean-Luc Beuzit, Christian Thalmann, Carsten Dominik, Markus Feldt, Thomas Henning, Michael Min, Julien H. Girard, Raphael Galicher, Mickael Bonnefoy, Thierry Fusco, Jos de Boer, Markus Janson, Anne-Lise Maire, Dino Mesa, Joshua E. Schlieder

Comments: 25 pages, 28 figures

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

[観測]

HR 4796 A の周りには傾いた非常に明るいデブリ円盤が散乱光で観測されており、明るさの原因が不明なことと、傾きを説明するために未発見の惑星の存在が必要なことが示唆されている。今回 VLT/SPHERE を用いて高角度分解の赤外散乱光観測を行い、これらを検証した。まず地球の方向に傾いた円盤であることを confirm した。またミー散乱が卓越していたことから、ダストサイズは観測波長の 20um よりも十分に大きいことが示唆された。惑星は発見できなかったが、今回の観測によって惑星の存在に対してはさらに強い制約を与えることができた。

[2] [arxiv:1701.00685](https://arxiv.org/abs/1701.00685)

Title: "Close-up images of the final Philae landing site on comet 67P/Churyumov-Gerasimenko acquired by the ROLIS camera"

Author: S.E. Schröder, S. Mottola, G. Arnold, H.-G. Grothues, R. Jaumann, H.U. Keller, H. Michaelis, J.-P. Bibring, I. Pelivan, A. Koncz, K. Otto, E. Remeteau, F. Souvannavong, B. Dolives

Subjects:

[探査]

Rosetta の Philae lander に積まれた ROLIS カメラを用いて 67P/Churyumov-Gerasimenko 彗星の夜側の表面を LED 照明のもとで詳細に調べた。(細かい内容については割愛するが結論としては) Philae の最初の着陸地点の地表の特徴 (Mottola et al., 2015) とは異なる特徴が観察された。

[3] [arxiv:1701.00493](#)

Title: "Illusion and Reality in the Atmospheres of Exoplanets"

Author: Drake Deming, Sara Seager

Comments: Invited Review for the 25th Anniversary issue of JGR Planets, in press

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

[レビュー]

系外惑星大気の観測についてのレビュー。現状では惑星大気は主星の 0.001% ほどのシグナルしかないため観測は難しく、これまでの結果 (偏光・温度逆転・炭素惑星) は "illusions" である。しかし close-in 惑星のトランジット観測や、遠方惑星の直接撮像などによって、より robust な観測もできるようになってきており、雲やヘイズが遍在していることもわかってきた。現在のフロンティアは、ガス惑星の重元素量、炭素系分子の検出、温度分布や熱循環、スーパーアースの大気観測などである。将来的には JWST, ELT, HabEx, LUVOIR などによる地球の双子の大気観測が期待される。

[4] [arxiv:1701.00588](#)

Title: "Stellar & Planetary Parameters for K2's Late Type Dwarf Systems from C1 to C5"

Author: Arturo O. Martinez, Ian J. M. Crossfield, Joshua E. Schlieder, Courtney D. Dressing, Christian Obermeier, John Livingston, Simona Ciceri, Sarah Peacock, Charles A. Beichman, Sébastien Lépine, Kimberly M. Aller, Quadry A. Chance, Erik A. Petigura, Andrew W. Howard, Michael W. Werner

Comments: 12 pages, 10 figures, 5 tables, accepted to ApJ. Also see related paper by Dressing et al. titled 'Characterizing K2 Candidate Planetary Systems Orbiting Low-Mass Stars I: Classifying Low-Mass Stars Observed During Campaigns 1-7'

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

[観測]

K2 mission で惑星 (候補) が確認された K, M dwarfs について、SOFI@ESONTT を用いた観測により星のパラメータを制約した。またその結果から、惑星 (候補) の半径と平衡温度を再計算した。M dwarf 周りの惑星の半径と平衡温度の平均値は、それぞれ $3R_{\oplus}$, 500K であった。

[5] [arxiv:1701.00586](#)

Title: "Characterizing K2 Candidate Planetary Systems Orbiting Low-Mass Stars I: Classifying Low-mass Host Stars Observed During Campaigns 1-7"

Author: Courtney D. Dressing, Elisabeth R. Newton, Joshua E. Schlieder, David

Charbonneau, Heather A. Knutson, Andrew Vanderburg

Comments: 36 pages, 25 figures, 7 tables, in press at ApJ. Stellar parameters and spectra posted to ExoFOP-K2 (this [https URL](https://github.com/charbonneau/k2-exoplanets)). Also see related paper by Martinez et al. titled "Stellar & Planetary Parameters for K2's Late Type Dwarf Systems from C1 to C5."

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

[観測]

K2 Mission の Campaigns 1-7 で発見された 144 個の候補惑星系について近赤外スペクトル観測を行った。K3-M4 の矮星のスペクトルを持つ 72 個の系について、経験的な関係式を用いて星のパラメータを決め直した。星の温度は先行研究 (EPIC) と consistent であったが、半径は 39% ほど大きくなった。

1 月 5 日 (木曜日)

[1] [arxiv:1701.00990](https://arxiv.org/abs/1701.00990)

Title: "Computation of the transmitted and polarized scattered fluxes by the exoplanet HD 189733b in X-rays"

Author: F. Marin, N. Grosso

Comments: 14 pages, 17 figures, accepted for publication in ApJ

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

[理論/観測/実験 etc....]

Comment!!!!

[2] [arxiv:1701.00983](https://arxiv.org/abs/1701.00983)

Title: "Dynamic mineral clouds on HD 189733b II. Monte Carlo radiative transfer for 3D cloudy exoplanet atmospheres: combining scattering and emission spectra"

Author: Graham Lee, Kenneth Wood, Ian Dobbs-Dixon, Anna Rice, Christiane Helling

Comments: 17 pages, 11 figures, 2 tables. Accepted to A&A

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

[理論/観測/実験 etc....]

Comment!!!!

[3] [arxiv:1701.00965](https://arxiv.org/abs/1701.00965)

Title: "Moist Convection and the 2010-2011 Revival of Jupiter's South Equatorial Belt"

Author: Leigh N. Fletcher, G.S. Orton, J.H. Rogers, R.S. Giles, A.V. Payne, P.G.J. Irwin, M. Vedovato

Comments:

30 pages, 13 figures, accepted for publication in Icarus (2017)

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

[理論/観測/実験 etc....]

Comment!!!!

[4] [arXiv:1701.00957](#)

Title: "Jovian Temperature and Cloud Variability during the 2009-2010 Fade of the South Equatorial Belt"

Author: Leigh N. Fletcher, G.S. Orton, J.H. Rogers, A.A. Simon-Miller, I. de Pater, M.H. Wong, O. Mousis, P.G.J. Irwin, M. Jacquesson, P.A. Yanamandra-Fisher

Comments: 22 pages, 11 figures, published in Icarus (2011)

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

[理論/観測/実験 etc....]

Comment!!!!

[5] [arXiv:1701.00943](#)

Title: "Variegation and space weathering on asteroid 21 Lutetia"

Author: S.E. Schröder, H.U. Keller, S. Mottola, F. Scholten, F. Preusker, K.-D. Matz, S. Hviid

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

[理論/観測/実験 etc....]

Comment!!!!

[6] [arXiv:1701.00917](#)

Title: "A Condensation-Coalescence Cloud Model for Exoplanetary Atmospheres: Formulation and Test Applications to Terrestrial and Jovian Clouds"

Author: Kazumasa Ohno, Satoshi Okuzumi

Comments: 11 pages, 7 figures, accepted for publication in ApJ

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

[理論/観測/実験 etc....]

Comment!!!!

[7] [arXiv:1701.00855](#)

Title: "From star-disc encounters to numerical solutions for a subset of the restricted three-body problem"

Author: Andreas Breslau, Kirsten Vincke, Susanne Pfalzner

Comments: 11 pages, 8 figures, + 2 pages appendix, accepted by A&A

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

[理論/観測/実験 etc....]

Comment!!!!

[8] [arXiv:1701.00843](#)

Title: "HST PanCET program: A Cloudy Atmosphere for the promising JWST target WASP-101b"

Author: H.R. Wakeford, K.B. Stevenson, N.K. Lewis, D.K. Sing, M. López-Morales, M. Marley, T. Kataria, A. Mandell, G.E. Ballester, J. Barstow, L. Ben-Jaffel, V. Bourrier, L.A. Buchhave, D. Ehrenreich, T.M. Evans, A. García Muñoz, G. Henry, H. Knutson, P. Lavvas, A. Lecavelier des Etangs, N. Nikolov, J. Sanz-Forcada

Comments: 7 pages, 4 figures, 1 table, Accepted to ApJL

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

[理論/観測/実験 etc....]

Comment!!!!

[9] [arXiv:1701.00828](#)

Title: "The Atmosphere and Interior Structure of HAT-P-13b from Spitzer Secondary Eclipses"

Author: Ryan A. Hardy, Joseph Harrington, Matthew R. Hardin, Nikku Madhusudhan, Thomas J. Loredo, Ryan C. Challener, Andrew S.D. Foster, Patricio E. Cubillos, Jasmina Blečić

Comments: Accepted for publication by The Astrophysical Journal December 12, 2016

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

[理論/観測/実験 etc....]

Comment!!!!

[10] [arXiv:1701.00885](#)

Title: "Ultraviolet to optical diffuse sky emission as seen by the Hubble Space Telescope Faint Object Spectrograph"

Author: K. Kawara, Y. Matsuoka, K. Sano, T. Brandt, H. Sameshima, K. Tsumura, S. Oyabu, N. Ienaka

Comments: This paper is dedicated to the memory of Dr. Kimiaki Kawara; accepted for publication in PASJ

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

[理論/観測/実験 etc....]

Comment!!!!

1月6日(金曜日)

[1] [arXiv:1701.01373](#)

Title: "Atmospheric Constraints on the Surface UV Environment of Mars at 3.9 Ga Relevant to Prebiotic Chemistry"

Author: Sukrit Ranjan, Robin D. Wordsworth, Dimitar D. Sasselov

Comments: Under review at Astrobiology; recommended for publication by referees pending minor revisions; this version includes the revisions recommended by referees. Addition comments and feedback very welcome

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

[理論/観測/実験 etc....]

Comment!!!!

[2] [arXiv:1701.01303](#)

Title: "The Spitzer search for the transits of HARPS low-mass planets - II. Null results for 19 planets"

Author: M. Gillon, B.-O. Demory, C. Lovis, D. Deming, D. Ehrenreich, G. Lo Curto, M. Mayor, F. Pepe, D. Queloz, S. Seager, D. Segransan, S. Udry

Comments: Accepted for publication in Astronomy and Astrophysics. 23 pages, 21 figures

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

[理論/観測/実験 etc....]

Comment!!!!

[3] [arXiv:1701.01294](#)

Title: "The K2-ESPRINT Project VI: K2-105 b, a Hot-Neptune around a Metal-rich G-dwarf"

Author: Norio Narita, Teruyuki Hirano, Akihiko Fukui, Yasunori Hori, Fei Dai, Liang Yu, John Livingston, Tsuguru Ryu, Grzegorz Nowak, Masayuki Kuzuhara, Yoichi Takeda, Simon Albrecht, Tomoyuki Kudo, Nobuhiko Kusakabe, Enric Pallé, Ignasi Ribas, Motohide Tamura, Vincent Van Eylen, Joshua N. Winn

Comments: 11 pages, 9 figures, 4 tables, PASJ accepted

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

[理論/観測/実験 etc....]

Comment!!!!

[4] [arXiv:1701.01251](#)

Title: "A cautionary tale: limitations of a brightness-based spectroscopic approach to chromatic exoplanet radii"

Author: H. M. Cegla, C. Lovis, V. Bourrier, C. A. Watson, A. Wyttenbach

Comments: 5 pages, 2 figures, 1 table, accepted to A&A

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

[理論/観測/実験 etc....]

Comment!!!!

[5] [arXiv:1701.01115](#)

Title: "Self-induced dust traps: overcoming planet formation barriers"

Author: Jean-François Gonzalez, Guillaume Laibe, Sarah T. Maddison

Comments: Accepted for publication in MNRAS. 15 pages, 16 figures. A higher resolution version of the paper, as well as the online videos, are available at this [https URL](#)

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

[理論/観測/実験 etc....]

Comment!!!!

[6] [arXiv:1701.01113](#)

Title: "HD 209458b in New Light: Detection of Nitrogen Chemistry, Patchy Clouds and Sub-Solar Water"

Author: Ryan J. MacDonald, Nikku Madhusudhan

Comments: 20 pages, 12 figures. Submitted to MNRAS

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

[理論/観測/実験 etc....]

Comment!!!!

[7] [arXiv:1701.01354](#)

Title: "Virtual Planetary Space Weather Services offered by the Europlanet H2020 Research Infrastructure"

Author: N. André, M. Grande, N. Achilleos, M. Barthélémy, M. Bouchemit, K. Benson, P.-L. Blelly, E. Budnik, S. Caussarieu, B. Cecconi, T. Cook, V. Génot, P. Guio, A. Goutenoir, B. Grison, R. Hueso, M. Indurain, G. H. Jones, J. Lilensten, A. Marchaudon, D. Matthiäe, A. Opitz, A. Rouillard, I. Stanislawska, J. Soucek, C. Tao, L. Tomasik, J. Vaubaillon

Comments:

14 pages

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

[理論/観測/実験 etc....]

Comment!!!!

[8] [arXiv:1701.01297](#)

Title: "Circular spectropolarimetric sensing of chiral photosystems in decaying leaves"

Author: C.H. Lucas Patty, Luuk J.J. Visser, Freek Ariese, Wybren Jan Buma, William B. Sparks, Rob J.M. van Spanning, Wilfred F.M. Röling, Frans Snik

Comments: 29 pages, 6 figures

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

[理論/観測/実験 etc....]

Comment!!!!

[9] [arXiv:1701.01257](#)

Title: "Retrieval of atmospheric properties of cloudy L dwarfs"

Author: Ben Burningham, Mark S. Marley, Michael R. Line, Channon Visscher, Caroline V. Morley, Didier Saumon, Roxana Lupu, Richard Freedman

Comments: Submitted to MNRAS. This will be updated after review. Comments and suggestions very welcome

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

[理論/観測/実験 etc....]

Comment!!!!

Nature

ない

Science

ない