［　電気情報工学科　］

［　論文　］

袖 美樹子

A Study to Ensure Communication Reliability of Bus Location System Using LoRa Communication [査読あり]

Mikiko Sode Tanaka, Shunsuke Segawa, Riku Ichimura, Takato Nakaya, Naoyuki Masuda, Ryotaro Sakauchi

IEEE Consumer Electronics Magazine, page:1-8, (2023)

香川 福有

Evaluation of the Timber Internal Crack Using CNN

Renon Toyosaki, Shigeru Kato, Takashi Tamaki, Naoki Wada, Tomomichi Kagawa, Kazuki Shiogai, Hajime Nobuhara

Lecture Notes on Data Engineering and Communications Technologies, vol:189, page:263-273, (2023-10)

香川 福有

Study on Apple’s Texture Considering Peel

Renon Toyosaki, Kyohei Kondo, Yuta Takahashi, Shigeru Kato, Shusaku Nomura, Kai Sasaki, Naoki Wada, Tomomichi Kagawa, Kazuki Shiogai, Hajime Nobuhara, Yukinori Sato

Transactions on GIGAKU, vol:10, No.1, page:1-8, (2023-09)

加藤 克巳

Electric field relaxation by FGM on permittivity to three-core type GIS spacer [査読あり] [筆頭著者] [責任著者]

Katsumi Kato, Soya Bito, Ryuto Nomura, Hidetaka Masui, Kenji Okamoto

23rd International Symposium on High Voltage Engineering (ISH2023), Glasgow. UK, No.03.2.04, (2023-08)

若林 誠

Cultivation of Space Related Human Resources by KOSEN Collaboration Group: 2020 Online Lectures and Idea Pre-Contests for Developing Mission Planning Ability [査読あり] [筆頭著者]

Makoto WAKABAYASHI, Masafumi IMAI, Kazumasa IMAI, Masahiro TOKUMITSU, Jun NAKAYA, Yukikazu MURAKAMI, Nobuto HIRAKOSO, Kazuo SHIMADA, Taku TAKADA

Journal of Evolving Space Activities, vol:1, No.66, (2023-12)

[概要]This paper describes the space related human resources development

project conducted by KOSENs in 2020. Satellite development is effective for practical education in KOSENs. As such, KOSEN Space Collaboration Group have held bootcamp style education programs for KOSEN students since 2015 and online lectures on space science and technology since 2018. Herein, we have proposed a new contest called the All KOSEN Space Contest to cultivate satellite mission planning skills. To evaluate the efficiency of this proposed contest, we conducted a pre-contest in 2020 and researched the educational benefits of this pre-contest. From the results, we were able to extract useful insights to guide the planning of the main contests with potential to bridge the gap between our previous educational programs and actual satellite development. Consequently, the result of this study indicates that the satellite development skills of KOSEN students can be further improved.

若林 誠

Three-year Achievements in Human Resource Development Program in Space Engineering [査読あり]

Kentaro KITAMURA, Mitsumasa IKEDA, Sei-ichiro MIURA, Kazumasa IMAI, Taku TAKADA, Makoto WAKABAYASHI, Yoshihiro KAJIMURA, Nobuto HIRAKOSO, Manabu SHINOHARA, Masahiro TOKUMITSU, Jun NAKAYA, Yukikazu MURAKAMI, Yoshihiro KAKINAMI

Journal of Evolving Space Activities, vol:1, No.47, (2023-06)

[概要]In this paper, we report an achievement of Human Resource Development Program for student of National Institute of Technology (KOSEN). This program is aimed to cultivate an ability of the aerospace engineering in non-space major students. The program consists of three parts of sub-programs: (1) KOSEN Space Academia which is a remote hands-on seminar using video conference system (2) KOSEN Space Camp which is a four-days camp-style workshop held in Niihama city, and (3) KOSEN-1 project which is an actual development of 2U size CubeSat. A total of 263 students and 78 faculty members participated in this program for three years from 2017 to 2019.

塩貝 一樹

Evaluation of the Timber Internal Crack Using CNN.

Renon Toyosaki, Shigeru Kato, Takashi Tamaki, Naoki Wada, Tomomichi Kagawa, Kazuki Shiogai, Hajime Nobuhara

3PGCIC, page:263-273, (2023)

今井 雅文

Lightning at Jupiter pulsates with a similar rhythm as in-cloud lightning at Earth [査読あり]

Ivana Kolmašová, Ondřej Santolík, Masafumi Imai, William S. Kurth, George B. Hospodarsky, John E. P. Connerney, Scott J. Bolton, Radek Lán

Nature Communications, vol:14, No.1, (2023-05-23)

[概要] Our knowledge about the fine structure of lightning processes at Jupiter was substantially limited by the time resolution of previous measurements. Recent observations of the Juno mission revealed electromagnetic signals of Jovian rapid whistlers at a cadence of a few lightning discharges per second, comparable to observations of return strokes at Earth. The duration of these discharges was below a few milliseconds and below one millisecond in the case of Jovian dispersed pulses, which were also discovered by Juno. However, it was still uncertain if Jovian lightning processes have the fine structure of steps corresponding to phenomena known from thunderstorms at Earth. Here we show results collected by the Juno Waves instrument during 5 years of measurements at 125-microsecond resolution. We identify radio pulses with typical time separations of one millisecond, which suggest step-like extensions of lightning channels and indicate that Jovian lightning initiation processes are similar to the initiation of intracloud lightning at Earth.

今井 雅文

The Io, Europa, and Ganymede Auroral Footprints at Jupiter in the Ultraviolet: Positions and Equatorial Lead Angles [査読あり]

V. Hue, G. R. Gladstone, C. K. Louis, T. K. Greathouse, B. Bonfond, J. R. Szalay, A. Moirano, R. S. Giles, J. A. Kammer, M. Imai, A. Mura, M. H. Versteeg, G. Clark, J.‐C. Gérard, D. C. Grodent, J. Rabia, A. H. Sulaiman, S. J. Bolton, J. E. P. Connerney

Journal of Geophysical Research: Space Physics, vol:128, No.5, (2023-05-18)

和田 直樹

Evaluation of the Timber Internal Crack Using CNN [査読あり]

Renon Toyosaki, Shigeru Kato, Takashi Tamaki, Naoki Wada, Tomomichi Kagawa, Kazuki Shiogai, Hajime Nobuhara

Lecture Notes on Data Engineering and Communications Technologies, vol:189, page:263-273, (2023-10)

和田 直樹

Study on Apple’s Texture Considering Peel [査読あり]

Renon Toyosaki, Kyohei Kondo, Yuta Takahashi, Shigeru Kato, Shusaku Nomura, Kai Sasaki, Naoki Wada, Tomomichi Kagawa, Kazuki Shiogai, Hajime Nobuhara, Yukinori Sato

Transactions on GIGAKU, vol:10, No.1, page:1-8, (2023-09)

[MISC]

袖 美樹子

AI 採点システム：編集にあたって／概要

袖 美樹子

情報処理, vol:64, No.5, page:218-220, (2023-04-15)

http://id.nii.ac.jp/1001/00225523/

袖 美樹子

AI はクリエータになれるか：編集にあたって／概要

袖 美樹子, 吉村 剛

情報処理, vol:64, No.7, page:326-329, (2023-06-15)

http://id.nii.ac.jp/1001/00226342/

袖 美樹子

デジタルツインコンピューティング：編集にあたって／概要

袖 美樹子, 吉村 剛, 西田 光甫

情報処理, vol:64, No.11, page:580-583, (2023-10-15),

http://id.nii.ac.jp/1001/00228355/

袖 美樹子

イベント企画 量子インターネット　司会

袖 美樹子

情報処理学会 第 86 回全国大会, (2024-3-15--2024-3-17)

袖 美樹子

イベント企画　高専の情報教育 司会

袖 美樹子

情報処理学会 第 86 回全国大会, (2024-3-15--2024-3-17)

若林 誠

高専連携技術実証衛星 4 号機「KOSEN-3」の軌道上実証と次世代宇宙人材育成(1)

村上幸一, 梶村好宏, 徳光政弘, 今井一雅, 平社信人, 若林誠, 今井雅文, 池田光優, 片山光亮, 高田拓, 西尾正則, 中谷淳, 北村健太郎

宇宙科学技術連合講演会講演集(CD-ROM), vol:67th, (2023)

[講演・口頭発表等]

袖 美樹子

新居浜太鼓祭り観光サイト「ドンどこ」

藤倉 和哉, 石丸 雄己, 岩本 壮汰, 袖 美樹子

第 29 回日本高専学会年会講演会, (2023-8-30--2023-9-1)

袖 美樹子

生成 AI を用いた小学生向け学習 Web アプリの開発手法の検討

黒河 宗汰, 野間 旺次朗, 袖 美樹子

2024 年電子情報通信学会総合大会, (2024-3-4--2024-3-8)

袖 美樹子

新居浜市における LoRa 通信実験結果

野間 旺次朗, 黒河 宗汰, 袖 美樹子

2024 年電子情報通信学会総合大会, (2024-3-4--2024-3-8)

若林 誠

高専における宇宙人材育成の取り組み - 2020 年度からの 3 か年と今後の展望について-

若林 誠, 高専スペース連携

情報処理学会 第 86 回全国大会, (2024-03-17)

[概要]2020～2022 年度の 3 か年で文部科学省の宇宙人材育成プログラムに採択され, 新居浜高専を主管として高専での宇宙人材育成事業を実施してきた. この事業においては, 国立高専での衛星開発を目指して従来から行ってきた「高専スペースキャンプ」「高専スペースアカデミア」といった取り組みの高度化に加え, 「高専宇宙コンテスト」を新たに企画して実施した. これまでの取り組みの代表的な成果として, 国立高専初の人工衛星「KOSEN-1」の開発・打ち上げ・運用に成功している. 今後は, 人工衛星開発に限らず, より広く宇宙産業に貢献できる人材育成を目指しており, 本講演ではこれらの取り組みとそこから展開する将来像について紹介する.

若林 誠

Development of Space Related Human Resources through Collaboration between Space Academia 2021 and the All KOSEN Space Contest

Makoto Wakabayashi, Kazumasa Imai, Masafumi Imai, Masahiro Tokumitsu, Jun Nakaya, Yukikazu Murakami, Taku Takada, Nobuto Hirakoso, Kazuo Shimada

Joint Conference: 34th ISTS & 12th NSAT, (2023-06-04)

[概要]This paper reports on the space human resources development project at a National Institute of Technology (KOSEN) in 2021. We aim to provide regular opportunities for nano-satellite development as part of manufacturing education at KOSENs. In order to cultivate human resources who can be involved in satellite development at KOSENs, educational programs such as the KOSEN Space Camp (training camp format, since 2015) and the KOSEN Space Academia (online format, since 2017) have been implemented. In these programs, the contents and materials used have been changed according to the relationship with actual satellites under development, students' interests, and social conditions (including the Corona disaster). In order to foster mission planning skills in actual orbit, a new ″All KOSEN Space Contest″ was planned for KOSEN students, and the first competition was held

in FY2021. We believe that these efforts have expanded opportunities for KOSEN students to participate in satellite development. We further encourage continued participation over multiple years in conjunction with Space Academia, and will consider improvements to the course content.

今井 雅文

One-Year Operation of Technology Demonstration CubeSat KOSEN-1

Masafumi Imai, Kazumasa Imai, Nobuto Hirakoso, Masanori Nishio, Taku Takada, Kentaro Kitamura, Jun Nakaya, Yukikazu Murakami, Masahiro Tokumitsu, Kan Fukai, KOSEN-1 Team

Joint Conference: 34th ISTS & 12th NSAT, (2023-06-05)

[概要]On December 12, 2018, JAXA announced that KOSEN-1 2-U CubeSat was selected as one of the themes for the Innovative Satellite Technology Demonstration-2. This CubeSat is officially called Jupiter radio observation technology demonstration satellite. The CubeSat includes three key technologies to (1) demonstrate a high-accuracy attitude control system via the dual reaction wheel (DRW), (2) utilize an on-board computer with a Linux microcomputer board (Raspberry Pi Compute Module 1), and (3) deploy a 6.6-m long dipole antenna from the CubeSat for Jupiter radio observations. On November 9, 2021, KOSEN-1 was successfully launched by a JAXA Epsilon-5 Launch Vehicle and released in a low-earth orbit. On the same day, the continuous wave was captured, and five days later, the frequency modulation packet communications between the CubeSat and ground-tracking stations were confirmed. Since its launch, KOSEN-1 has been operated with seven college-based ground-tracking stations in Japan. After we checked out the satellite's onboard equipment, the attitude detection system with the 180-degree omnidirectional camera system and the DRW attitude control system have been successfully used in space. Through the KOSEN-1 operation over 1 year, we have performed several control commands. In this paper, we report a summary of our one-year operation results.

今井 雅文

Statistical study of Jupiter dispersed pulses observed by Juno

Masafumi Imai, William S. Kurth, Ivana Kolmasova, Ondrej Santolik, Michael H. Wong, Shannon T. Brown, George B. Hospodarsky, Scott J. Bolton, Steven M. Levin

SGEPSS Fall Meeting 2023, (2023-09-26)

[概要] Jupiter's lightning produces strong pulses at radio wavelengths. One type of lightning-induced electromagnetic waves are dispersed millisecond pulses called Jupiter dispersed pulses (JDPs) found at frequencies below 150 kHz. During the polar perijove passes of Juno through 33 orbits, we found over three thousand 16-ms burst snapshots that included one or more JDPs observed by the radio and plasma wave (Waves) instrument. Assuming that JDPs propagate in the free left-hand ordinary (L-O) mode, we proposed an O mode

propagation model in which low-density plasma irregularities are located between Juno and lightning strokes. These irregularities take the form of ionospheric holes with densities below 250 cm-3. By taking account of the group delay of L-O mode waves, we estimate the length of these irregularities from a fraction of a km to a few times 105 km. Also, we compare the JDP locations with the cloud features captured by the Hubble Space Telescope. In this presentation, we show the statistical characteristics of JDPs and the related ionospheric holes using Juno data.

[共同研究・競争的資金等の研究課題]

袖 美樹子

小学生向け作物育成シミュレーション

袖 美樹子

愛媛県東予地方局, (2023-8-4--2024-03-31)

袖 美樹子

広域分散 IoT 要素技術開発

袖 美樹子, 先山 卓朗, 塩貝 一樹, 白井 みゆき

住友金属鉱山, (2024-3-1--2025-3-31)

若林 誠

全国高専宇宙工学コース設立による実践的宇宙人材育成の展開

今井雅文, 今井一雅, 高橋崇之, 徳光政弘, 村上幸一, 平社信人

文部科学省, 宇宙航空科学技術推進委託費, (2023-10--2026-03)

若林 誠

高校生から始める汎用衛星モデルによる実践的衛星開発カリキュラム実現に向けた研究

若林 誠, 中谷 淳, 今井 雅文, 村上 幸一, 徳光 政弘, 高田 拓

日本学術振興会, 科学研究費助成事業 基盤研究(B), (2022-04--2026-03)

今井 雅文

全国高専宇宙工学コース設立による実践的宇宙人材育成の展開

若林誠, 今井雅文, 今井一雅, 立川崇之, 徳光政弘, 村上幸一, 平社信人

文部科学省, 令和 5 年度宇宙航空科学技術推進委託費, (2023-10--2026-03)

今井 雅文

木星周回衛星 Juno の多波長データ解析から迫る木星雷研究の新展開

今井 雅文

日本学術振興会, 科学研究費助成事業 若手研究, (2023-04--2026-03)

今井 雅文

高校生から始める汎用衛星モデルによる実践的衛星開発カリキュラム実現に向けた研究

若林 誠，中谷 淳，今井 雅文，村上 幸一，徳光 政弘，高田 拓

日本学術振興会，科学研究費助成事業 基盤研究(B)，(2022-04--2026-03)

今井 雅文

四国中山間地域から切り拓く広帯域低周波電波望遠鏡：木星電波観測

今井雅文

名古屋大学宙地球環境研究所，2023 年度一般共同研究，(2023-03--2024-03)

今井 雅文

伸展型八木アンテナ搭載超小型衛星による IoT の宇宙利用拡大に応える周波数利用の効率化と共同利用促進技術の研究開発

徳光政弘，田所敬一，今井一雅，高田拓，今井雅文，中谷淳

総務省，令和 5 年度電波有効利用促進型研究開発，(2023-05--2024-03)

[社会貢献活動]

袖 美樹子

電子情報通信学会 SR 研究会、2024 年度委員

袖 美樹子

TPC member for ICUFN 2024 (The 15th International Conference on Ubiquitous and Future Networks)

袖 美樹子

TPC member for ICAIIC 2024 (2024 International Conference on Artificial Intelligence in Information and Communication

袖 美樹子

ICOIN 2024 The 38th International Conference on Information Networking

レビュアー

袖 美樹子

IWIN 2023 **レビュアー**

袖 美樹子

ICUFN 2023 **レビュアー**

袖 美樹子

情報処理学会第 86 回全国大会 PC 委員

袖 美樹子

情報処理学会　2023 年度代表会員

袖 美樹子

情報通信審議会 情報通信技術分科会　ITU 部会 地上業務委員会

香川 福有

日本のお手玉の会・本部理事

日本のお手玉の会, (2015-09--)

香川 福有

日本のお手玉の会・新居浜支部・理事

日本のお手玉の会, (2015-07--)

香川 福有

日本のお手玉の会・新居浜高専奇術部支部・支部長

日本のお手玉の会, (2014-07--)

今井 雅文

KOSEN Space Workshop in 石鎚クライミングパーク SAIJO

新居浜工業高等専門学校, (2023-10-22)

今井 雅文

KOSEN-1 衛星からのモールス信号を受信してみよう！

愛媛県総合科学博物館, (2023-12-09)

［　メディア報道　］

今井 雅文

小中生が手作りアンテナで「衛星の声」キャッチ 西条で新居浜高専ワークショップ

(2023-10-27)