

●物理学 Physics

1. 所属構成員等

准教授 小野裕明
講師 渡辺みのり(兼任)
客員教授 宮田等
非常勤講師 山下陽介, 山田弘明

2. 研究テーマ

1. Belle II 実験のための分散コンピューティングシステムの研究 R&D of distributed computing system for Belle II experiment
2. ILC実験のための分散コンピューティングシステムの研究 R&D of distributed computing system for ILC experiment
3. ILC実験のためのカロリメータ検出器開発研究 R&D of calorimeter detector for ILC experiment
4. 原子炉ニュートリノ検出器の開発 Development of reactor neutron monitor
5. 常温硬化プラスチックシンチレータの開発 Development of plastic scintillator cured at room temperature

3. 今年度の研究上の特筆すべき事項

学会賞

記載事項なし

特許

記載事項なし

4. 学位取得者

記載事項なし

5. 主催学会等

記載事項なし

6. 国際交流状況

1. 新潟大学と共同でフィリピンミンダナオ州立大学イリガン工科校との共同研究を行なっている。
2. 国際リニアコライダー(ILC)実験のILD検出器グループ・CALICEグループに参加し、国際共同研究を行なっている。特にILDソフトウェアグループではシミュレーションデータ生成の共同責任者としての役割を担っている。
3. 国際共同実験Belle/Belle IIグループに参加し、DIRACシステムを用いたシミュレーションデータ生成のための計算資源の提供・管理、コンピューティンググループのエキスパートリーダー・エキスパートとしてデータ生成モニタリングの役割を担っている。

7. 外部研究費

1. 科学研究費補助金, 若手研究B, (継続), 2020-2022年度, 常温硬化樹脂を用いた大面積薄膜プラスチックシンチレータによる α 線検出器開発, 渡辺みのり(代表), 0円
2. 科学研究費補助金, 基盤研究C, (継続), 2019-2022年度, 常温硬化プラスチックシンチレータの基本性能向上と高機能化に向けた研究, 小野裕明(代表), 520000円

8. 研究業績

A. 著書

記載事項なし

B. 原著

1. Abudinén F, Adachi I, Adak R, Adamczyk K, Aggarwal L, (Belle II Collaboration), Ono H, Watanabe M (381, 555th) (593 authors). Measurement of the branching fraction for the decay $B \rightarrow K^*(892) \ell^+ \ell^-$ at Belle II. $\diamond$ arXiv. 2022; 1–11. doi : 10.48550/arXiv.2206.05946.
2. Abudinén F, Adachi I, Adak R, Adamczyk K, Aggarwal L, (Belle II Collaboration), Ono H, Watanabe M (381, 555th) (593 authors). First decay-time-dependent analysis of $B^0 \rightarrow K^0_S \pi^0$ at Belle II. $\diamond$ arXiv. 2022; 1–12. doi : 10.48550/arXiv.2206.07453.
3. Abudinén F, Adachi I, Adamczyk K, Aggarwal L, Ahlburg P, (Belle II Collaboration), Ono H, Watanabe M (384, 557th) (594 authors). Study of Exclusive $B \rightarrow \pi^+ e^+ \nu_e$ Decays with Hadronic Full-event-interpretation Tagging in 189.3 fb $^{-1}$ of Belle II Data. $\diamond$ arXiv. 2022; 1–22. doi : 10.48550/arXiv.2206.08102.
4. Abudinén F, Adachi I, Adamczyk K, Aggarwal L, Ahlburg P, (Belle II Collaboration), Ono H, Watanabe M (384, 557th) (594 authors). Measurement of the branching fraction of the $B^0 \rightarrow K^0_S \pi^0 \gamma$ decay using 190 fb $^{-1}$ of Belle II data. $\diamond$ arXiv. 2022; 1–10. doi : 10.48550/arXiv.2206.08280.
5. Abudinén F, Adachi I, Adamczyk K, Aggarwal L, Ahlburg P, (Belle II Collaboration), Ono H, Watanabe M (384, 557th) (594 authors). Angular analysis of $B^+ \rightarrow \rho^+ \rho^0$ decays reconstructed in 2019, 2020, and 2021 Belle II data. $\diamond$ arXiv. 2022; 1–18. doi : 10.48550/arXiv.2206.12362.
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8. Abudinén F, Adachi I, Adak R, Adamczyk K, Aggarwal L, (Belle II Collaboration), Ono H, Watanabe M (382, 556th) (594 authors). Measurements of the branching fraction, isospin asymmetry, and lepton-universality ratio in $B \rightarrow J/\psi K$ decays at Belle II. $\diamond$ arXiv. 2022; 1–13. doi : 10.48550/arXiv.2207.11275.
9. Abudinén F, Adachi I, Adamczyk K, Aggarwal L, Ahlburg P, (Belle II Collaboration), Ono H, Watanabe M (381, 552th) (588 authors). Measurement of Branching Fraction and Longitudinal Polarization in $B^0 \rightarrow \rho^+ \rho^-$ Decays at Belle II. $\diamond$ arXiv. 2022; 1–14. doi : 10.48550/arXiv.2208.03554.
10. Li L. K, Shan W, Kinoshita K, (Belle Collaboration), Ono H, Watanabe M (116, 175th) (189 authors). Search for CP violation and measurement of branching fractions and decay asymmetry parameters for $\Lambda^+ c \rightarrow \Lambda h^+$ and $\Lambda^+ c \rightarrow \Sigma^0 h^+$ ($h=K, \pi$). $\diamond$ arXiv. 2022; 1–15. doi : 10.48550/arXiv.2208.08695.
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12. Abudinén F, Adachi I, Adamczyk K, Aggarwal L, Ahlburg P, (Belle II Collaboration), Ono H, Watanabe M (379, 550th) (586 authors). Measurement of the branching fractions and CP asymmetries of $B^+ \rightarrow \pi^+ \pi^0$ and $B^+ \rightarrow K^+ \pi^0$ decays in 2019–2021 Belle II data. $\diamond$ arXiv. 2022; 1–15. doi : 10.48550/arXiv.2209.05154.
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16. Abudinén F, Adachi I, Adamczyk K, Aggarwal L, Ahlburg P, (Belle II Collaboration), Ono H, Watanabe M (385, 558th) (594 authors). Determination of $|V_{cb}|$ from $B \rightarrow D \ell \nu$ decays using 2019–2021 Belle II data. $\diamond$ arXiv. 2022; 1–20. doi : 10.48550/arXiv.2210.13143.
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18. Abudinén F, Adachi I, Adamczyk K, Aggarwal L, Ahlburg P, (Belle II Collaboration), Ono H, Watanabe M (371, 548th) (584 authors). Reconstruction of $B \rightarrow \rho \ell \nu \ell$ decays identified using hadronic decays of the recoil B meson in 2019 -- 2021 Belle II data. $\diamond$ arXiv. 2022; 1–19. doi : 10.48550/arXiv.2211.15270.
19. Adachi I, Adamczyk K, Aggarwal L, Ahmed H, Aihara H, (Belle II Collaboration), Ono H, Watanabe M (246, 365th) (386 authors). Search for an invisible Z' in a final state with two muons and missing energy at Belle II. arXiv. 2022; 1–14. doi : 10.48550/arXiv.2212.03066.
20. Adachi I, Adamczyk K, Aggarwal L, Ahmed H, Aihara H, (Belle II Collaboration), Ono H, Watanabe M (255, 377th) (400 authors). Search for lepton-flavor-violating τ decays to a lepton and an invisible boson at Belle II. $\diamond$ arXiv. 2022; 1–7. doi : 10.48550/arXiv.2212.03634.
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24. Abudinén F, Adachi I, Adamczyk K, Aggarwal L, Ahlburg P, (Belle II Collaboration), Ono H, Watanabe M (379, 550th) (586 authors). Measurement of the $B_0 \rightarrow D^* - \ell^+ \nu \ell$ branching ratio and $|V_{cb}|$ with a fully reconstructed accompanying B meson in 2019–2021 Belle II data. $\diamond$ arXiv. 2023; 1–13. doi : 10.48550/arXiv.2301.04716.
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29. Bhuyan B, (Belle Collaboration), Ono H, Watanabe M (137, 199th) (213 authors). Search for the decay $B_s^0 \rightarrow \pi^0 \pi^0 B_s^0 \rightarrow \pi^0 \pi^0 \pi^0$ at Belle. $\diamond$ arXiv. 2023; 1–6. doi : 10.48550/arXiv.2301.08587.

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31. Krohn J.-F, Ferlewicz D, Urquijo P, (Belle Collaboration), Ono H (128th) (200 authors). Measurements of the branching fractions $B(\bar{B}^0 \rightarrow D^{*+} \pi^-)$ and $B(\bar{B}^0 \rightarrow D^{*+} K^-)$ and tests of QCD factorization. $\star \odot$ Phys. Rev. D. 2023; 107: 012003-1-012003-12. doi : 10.1103/PhysRevD.107.012003.
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41. Abudinén F, Aggarwal L, Ahmed H, Ahn J. K, Aihara H, (Belle II Collaboration), Ono H (236th) (362 authors). Measurement of the $\Lambda^+ c$ Lifetime. $\star \odot$ Phys. Rev. Lett.. 2023; 130: 071802-1-071802-7. doi : 10.1103/PhysRevLett.130.071802.
42. Abudinén F, Adachi I, Aggarwal L, Aihara H, Akopov N, (Belle II Collaboration), Ono H, Watanabe M (229, 335th) (357 authors). Search for a Dark Photon and an Invisible Dark Higgs Boson in $\mu^+ \mu^-$ and Missing Energy Final States with the Belle II Experiment. Phys. Rev. Lett.. 2023; 130: 071804-1-071804-8. doi : 10.1103/PhysRevLett.130.071804.
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48. Hsu C.-L, Sevier M.E, (Belle Collaboration), Ono H, Watanabe M (133, 192th) (204 authors). Angular analysis of the low K^+K^- invariant mass enhancement in $B^+ \rightarrow K^+K^- \pi^+ \pi^-$ decays. ☆◎Phys. Rev. D. 2023; 107: 032013-1-032013-12. doi : 10.1103/PhysRevD.107.032013.
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C. 解説・総説

記載事項なし

D. 報告・紀要

特記事項なし

E. 翻訳

特記事項なし

F. 学術大会(口演・ポスター発表)・講演会・研究会・研修会等での講演

1. Hiroaki Ono. Expert shifts. 42nd B2GM Computing parallel session, 茨城県つくば市 (オンライン), 2022年5月30～6月10日
2. 小野裕明. 分散コンピューティング. 第五回粒子物理コンピューティングサマースクール, 茨城県つくば市 (オンライン), 2022年8月1～5日
3. Hiroaki Ono. Operations. Data Production and Computing Workshop, イタリア ローマ (オンライン), 2022年10月3～9日
4. Hiroaki Ono. Operations and Data Production Shifts. Computing pre-B2GM remote meeting, オンライン, 2023年1月16～20日

G 講演

1) 特別講演・シンポジウム等での講演

記載事項なし