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FÜR PHYSIK



# Reports from the publication and speakers committee

Edda Gschwendtner (CERN), Patric Muggli (MPP),  
Giovanni Zevi Della Porta (MPP/CERN)

AWAKE Collaboration Meeting - 6 October 2023

<https://indico.cern.ch/event/1329098>

# Administrative details

- Members:
  - Edda Gschwendtner, ex officio as CERN Project Leader
  - Patric Muggli, ex officio as Coordinator of the Physics and Experiment Board
  - [Konstantin Lotov, Chair]
    - Members of Budker Institute of Nuclear Physics and Novosibirsk State University were suspended from participation in AWAKE scientific committees in April 2022
  - GZ, junior member, Chair ad interim
  
- Email: [awake-pc@cern.ch](mailto:awake-pc@cern.ch)
- Rules: [https://edms.cern.ch/ui/file/2030472/0.2/PubRulesOriginal\\_19April2021.pdf](https://edms.cern.ch/ui/file/2030472/0.2/PubRulesOriginal_19April2021.pdf)
  - Manage internal review of papers/talks/posters concerning AWAKE by AWAKE authors
    - **Reminder: “all papers mentioning AWAKE, written by a member of the AWAKE collaboration, must be sent to the PC before submission, and also before being put on arXiv”**
  - Determine if a paper is signed by “Collaboration”, organized review, maintain Official Author List
  - Keep a list of public papers: <https://twiki.cern.ch/twiki/bin/view/AWAKE/AwakePublic>
  - **Please send talks/posters at least 1 week before conference!**

# Recent AWAKE Collaboration papers



Physics of Plasmas

ARTICLE

[pubs.aip.org/aip/pop](https://pubs.aip.org/aip/pop)

arXiv > physics > arXiv:2309.03785

Physics > Plasma Physics

[Submitted on 7 Sep 2023]

## Hosing of a long relativistic particle bunch in plasma

Tatiana Nechaeva (1) (AWAKE Collaboration) ((1) Max-Planck-Institute for Physics, Munich, Germany)

### Hosing of a long relativistic particle bunch in plasma

T. Nechaeva,<sup>1,\*</sup> L. Verra,<sup>2</sup> J. Pucek,<sup>1</sup> L. Ranc,<sup>1</sup> M. Bergamaschi,<sup>1</sup> G. Zevi Della Porta,<sup>1,2</sup> and P. Muggli<sup>1</sup>  
(AWAKE Collaboration)

R. Agnello,<sup>3</sup> C.C. Ahdida,<sup>2</sup> C. Amoedo,<sup>2</sup> Y. Andrebe,<sup>3</sup> O. Apsimon,<sup>4,5</sup> R. Apsimon,<sup>5,6</sup> J.M. Arnesano,<sup>2</sup> V. Bencini,<sup>2,7</sup> P. Blanchard,<sup>3</sup> P.N. Burrows,<sup>7</sup> B. Buttenschön,<sup>8</sup> A. Caldwell,<sup>1</sup> M. Chung,<sup>9</sup> D.A. Cooke,<sup>10</sup> C. Davut,<sup>4,5</sup> G. Demeter,<sup>11</sup> A.C. Dexter,<sup>5,6</sup> S. Doebert,<sup>2</sup> J. Farmer,<sup>1</sup> A. Fasoli,<sup>3</sup> R. Fonseca,<sup>12,13</sup> I. Furno,<sup>3</sup> E. Granados,<sup>2</sup> M. Granetzny,<sup>14</sup> T. Graubner,<sup>15</sup> O. Grulke,<sup>8,16</sup> E. Gschwendtner,<sup>2</sup> E. Guran,<sup>2</sup> J. Henderson,<sup>5,17</sup> M.Á. Kedves,<sup>11</sup> S.-Y. Kim,<sup>9,2</sup> F. Kraus,<sup>15</sup> M. Krupa,<sup>2</sup> T. Lefevre,<sup>2</sup> L. Liang,<sup>4,5</sup> S. Liu,<sup>18</sup> N. Lopes,<sup>13</sup> K. Lotov,<sup>19,20</sup> M. Martinez Calderon,<sup>2</sup> S. Mazzoni,<sup>2</sup> K. Moon,<sup>9</sup> P.I. Morales Guzmán,<sup>1</sup> M. Moreira,<sup>13</sup> N. Okhotnikov,<sup>19,20</sup> C. Pakuza,<sup>7</sup> F. Pannell,<sup>10</sup> A. Pardons,<sup>2</sup> K. Pepitone,<sup>21</sup> E. Poimendidou,<sup>2</sup> A. Pukhov,<sup>22,7</sup> S. Rey,<sup>2</sup> R. Rossel,<sup>2</sup> H. Saberi,<sup>4,5</sup> O. Schmitz,<sup>14</sup> E. Senes,<sup>2</sup> F. Silva,<sup>23</sup> L. Silva,<sup>13</sup> B. Spear,<sup>7</sup> C. Stollberg,<sup>3</sup> A. Sublet,<sup>2</sup> C. Swain,<sup>5,24</sup> A. Topaloudis,<sup>2</sup> N. Torrado,<sup>13,2</sup> M. Turner,<sup>2</sup> F. Velotti,<sup>2</sup> V. Verzilov,<sup>18</sup> J. Vieira,<sup>13</sup> C. Welsch,<sup>5,24</sup> M. Wendt,<sup>2</sup> M. Wing,<sup>10</sup> J. Wolfenden,<sup>5,24</sup> B. Woolley,<sup>2</sup> G. Xia,<sup>5,4</sup> V. Yarygova,<sup>19,20</sup> and M. Zepp<sup>14</sup>

## Development of the self-modulation instability of a relativistic proton bunch in plasma

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# Recent multi-author papers

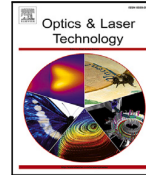
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Submitted to Plasma Sources Science and Technology

## Overview of the Madison AWAKE Prototype - A High Density Helicon Experiment

Marcel Granetzny, Barret Elward, Oliver Schmitz and Michael Zepp

University of Wisconsin - Madison, Department of Nuclear Engineering and Engineering Physics, WI, USA

Submitted to PRX

### Selective electron beam sensing through coherent Cherenkov diffraction radiation

E. Senes, M. Krupa, S. Mazzoni, K. Lasocha, T. Lefevre, A. Schloegelhofer, and M. Wendt  
*CERN, CH-1211 Geneva 23, Switzerland*

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C. Pakuza and B. Spear  
*John Adams Institute at University of Oxford, University of Oxford, Oxford, OX1 3RH, UK*  
(Dated: June 23, 2023)

# Recent proceedings

- IPAC 2023 (now online: <https://accelconf.web.cern.ch/ipac2023/>)
  - E. Guran, et al: AWAKE from Run 2a to Run 2b
  - P. Muggli: AWAKE: driving plasma wakefields with a proton bunch and accelerating electrons for particle physics applications
  - P. Muggli, et al: Self-modulation and current filamentation instabilities of long and wide proton bunches in plasma
  - V. Bencini, F. Velotti: Design of the new 18 MeV electron injection line for AWAKE Run2c
  - V. Bencini, et al: Beam characterization and optimization for AWAKE 18 MeV electron line
  - L. Verra, et al: Techniques to seed the self-modulation instability of a long proton bunch in plasma
  - C. Pakuza, et al: Electron beam studies on a beam position monitor based on Cherenkov Diffraction Radiation
  - S. Hirlander, et al: Ultra fast reinforcement learning demonstrated at CERN AWAKE
- IBIC:
  - E. Senes: Application of a camera array for the upgrade of the AWAKE spectrometer
- **Please keep the PC updated and send links to published proceedings so we can add them to the AWAKE webpage**

# Recent talks and posters

- IBIC
  - E. Senes: Application of a camera array for the upgrade of the AWAKE spectrometer
  - E. Senes: Sub-ps electro-optical bunch length monitoring studies for the AWAKE experiment
  - E. Senes: Dielectric Pick-up for Short bunches
- EPS HEP
  - M. Wing: The AWAKE Run 2 programme and beyond
- ICMRE
  - G. Xia: Advance WAKEfield Experiment (AWAKE) at CERN: current status and future plans
- SFP:
  - P. Muggli: Dernières nouvelles de AWAKE
- EPS Plasma
  - L. Verra: Electron Bunch Seeding of the Self-Modulation Instability in Plasma (PhD Research Award)
- APS-DPP
  - P. Muggli: AWAKE: one experiment, three beam-plasma instabilities
  - E. Walter: Towards Laboratory Astrophysics in Plasma Wakefield Accelerators
- RUPAC
  - N. Okhotnikov: Effect of linear plasma density gradient in the AWAKE experiment
- EAAC:
  - E. Gschwendtner: 2023 AWAKE Run Results
  - L. Verra: Laboratory Astrophysics and Plasma Wakefield Acceleration: Experimental Study of Magnetic Field Generation by Current Filamentation Instability of a Relativistic Proton Bunch in Plasma
  - J. P. Farmer: Wakefield regeneration in a plasma accelerator
  - M. Turner: Experimental Observation of Beam-Plasma Resonance Detuning due to Motion of Ions
  - N. Z. Van Gils: External Electron Injection for the AWAKE Run 2b Experiment
  - E. Gschwendtner: AWAKE and future colliders
  - N. Torrado: Double pulse generator for AWAKE scalable discharge plasma source
  - S. Marini: Integrated beam physics for the laser wakefield accelerator project EARLI
  - C. Amoedo: Proton Beam Self-Modulation Instability in a DC Discharge Plasma Source at AWAKE
  - G. Zevi Della Porta: A tale of three beams: towards stable and reproducible operation of the AWAKE facility
  - A. Sublet: First test of a 10 m discharge plasma source with a proton beam in the AWAKE experiment
- NWL (January 2024)
  - M. Turner: Plasma Wakefield Acceleration and the AWAKE experiment at CERN