




www.HidenAnalytical.com



Find Solutions for your
Plasma Diagnostics



- Knowledge,
- Experience,
- Expertise

[Click Here](#)

AIP

Physics of Plasmas

HOME

BROWSE

MORE ▼

[Home](#) > [Physics of Plasmas](#) > [Volume 21, Issue 5](#) > [10.1063/1.4880104](#)

< PREV

NEXT >



No Access

Submitted: 10 March 2014

Accepted: 13 May 2014

Published Online: 29 May 2014

Imperfect relativistic mirrors in the quantum regime

Physics of Plasmas **21**, 053109 (2014); <https://doi.org/10.1063/1.4880104>J. T. Mendonça^{1, a)}, A. Serbeto^{2, b)}, and R. M. O. Galvão^{3, c)}[View Affiliations](#)[View Contributors](#) PDF

ABSTRACT

The collective backscattering of intense laser radiation by energetic electron beams is considered in the relativistic quantum regime. Exact solutions for the radiation field are obtained, for arbitrary electron pulse shapes and laser intensities. The electron beams act as imperfect nonlinear mirrors on the incident laser radiation. This collective backscattering process can lead to the development of new sources of ultra-short pulse radiation in the gamma-ray domain. Numerical examples show that, for plausible experimental conditions, intense pulses of gamma-rays, due to the double Doppler shift of the harmonics of the incident laser radiation, can be produced using the available technology, with durations less than 1 as.

ACKNOWLEDGMENTS

This work has been supported by the Brazilian Agency CNPq and by the State of São Paulo Agency FAPESP. One of the authors (J.T.M.) would like to thank the hospitality of the Institute of Physics of the University of São Paulo during the final stages of this work.

SELECT YOUR ACCESS

INDIVIDUAL ACCESS



If you have an individual subscription, a subscription provided by one of AIP's Member Societies, have claimed access to a Conference Proceeding, or have made an individual purchase, sign in below.

Username:

Password

☐ Remember me

LOG IN

[Forgot password?](#)

INSTITUTIONAL ACCESS



Access through your institution

PURCHASE

☐

Standard PPV for \$35.00

ADD TO CART

Pdf document note icon in flat style. Pa Download	File upload line VECTOR icon Download	
---	---	--

Resources



 PDF

AUTHOR

LIBRARIAN

ADVERTISER

General Information

ABOUT

CONTACT

HELP

PRIVACY POLICY

TERMS OF USE

FOLLOW AIP PUBLISHING:



Website © 2022 AIP Publishing LLC.
Article copyright remains as
specified within the article.

Scitation



 PDF