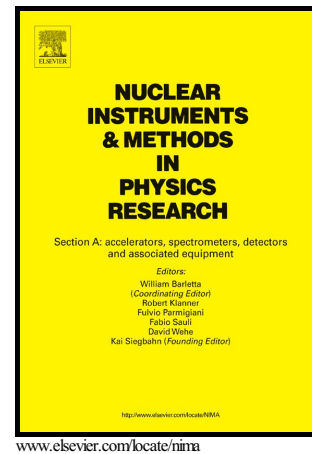


Optimization of a femtosecond laser generated x-ray source for pulsed radiography

XiaoHui Chen, XiaoYa Li, YunCan Ma, ZhaoKui Wu, Jun Li, WenJun Zhu



PII: S0168-9002(15)01310-8
DOI: <http://dx.doi.org/10.1016/j.nima.2015.10.076>
Reference: NIMA58207

To appear in: *Nuclear Inst. and Methods in Physics Research, A*

Received date: 1 September 2015
Revised date: 14 October 2015
Accepted date: 21 October 2015

Cite this article as: XiaoHui Chen, XiaoYa Li, YunCan Ma, ZhaoKui Wu, Jun Li and WenJun Zhu, Optimization of a femtosecond laser generated x-ray source for pulsed radiography, *Nuclear Inst. and Methods in Physics Research, A* <http://dx.doi.org/10.1016/j.nima.2015.10.076>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Optimization of a femtosecond laser generated x-ray source for pulsed radiography

XiaoHui Chen*, XiaoYa Li, YunCan Ma, ZhaoKui Wu, Jun Li, WenJun Zhu*

National Key Laboratory of Shock Wave and Detonation Physics, Institute of Fluid Physics,

China Academy of Engineering Physics, Mianyang, 621900 Sichuan, China

Corresponding Authors.

Tel. /fax: + 86 816 2485105

Email addresses: chenxh1988@126.com (XiaoHui Chen),

wjzhu@caep.cn (WenJun Zhu)

Abstract

X-ray radiography is an important tool in medicine as well as in life science and materials science. It is $K\alpha$ radiation that is of primary interest in the fields of x-ray diffraction, whereas the whole x-ray flux receives most attention in the x-ray imaging application. We present a general Monte Carlo model of x-ray generation in femtosecond laser-irradiated solid material. Bremsstrahlung radiation is taken into account explicitly, permitting both whole x-ray and $K\alpha$ emission to be calculated for arbitrary experimental conditions (i.e. target material, target thickness, target shape as well as laser intensity). The optimal thickness of both the whole x-ray and $K\alpha$ emission from Titanium (Ti) foils irradiated with femtosecond laser pulse has been

Download English Version:

<https://daneshyari.com/en/article/8171726>

Download Persian Version:

<https://daneshyari.com/article/8171726>

[Daneshyari.com](https://daneshyari.com)