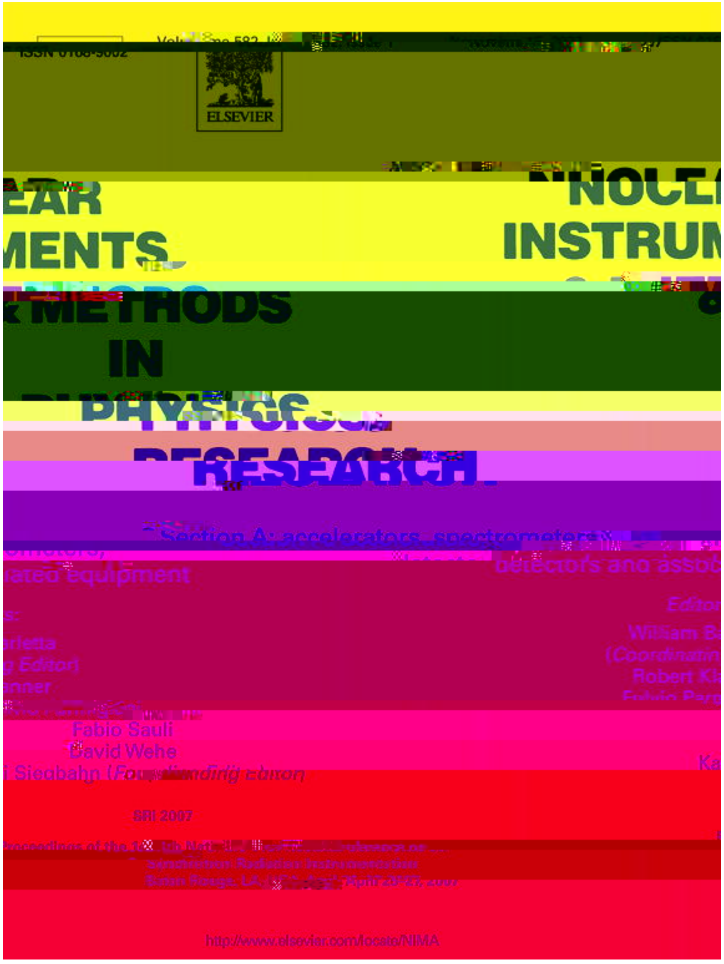
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NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH
Section A

The infrared microspectroscopy beamline at CAMD and its application in plant–pathogen interactions

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Abstract

At the beginning of 2006, the first infrared microspectroscopy beamline at the Louisiana State University, Center for Advanced Microstructures and Devices (CAMD) storage ring came into operation. The infrared microscope has recently been upgraded with a new liquid nitrogen-cooled mercury–cadmium–telluride detector, MCT-A, and a new dipole chamber to improve the signal-to-noise ratio and extend the beamline capability to far-IR region.

In this contribution, we report first results, by using the sg;o1.eratio76 o-33466.2(plant–pathog]d)]TJ-0.999-1.2266TD.9(interacti:ied)-325.

improves the , / ratio due to its superior brightness. As opposed to one measured with synchrotron radiation, not all the peaks can be discerned in the spectrum taken with a globar source.

The , / ratio is calculated by obtaining the interferogram maximum value and root-mean-square noise value from the region of 2450–2550 cm^{-1} of the corresponding 100% transmission spectrum. An order to two orders of magnitude better , / ratio is obtained for synchrotron radiation-based measurement (in the range of 100–200 mA beam current of storage ring) than the one obtained by the conventional thermal source. In Fig. 2, the measured , / ratio for synchrotron and globar sources is plotted as a function of the microscope's aperture size. , / measurements for synchrotron source were taken with 140 mA beam current. The brightness advantages of the synchrotron radiation greatly enhance the , /

for the healthy and infected leaves.