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X-ray Diagnostic Calibration with a Small Picosecond Laser Facility
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CEA-DIF BP12 91680 Bruyères-le-Chatel France — The broadband x-rays emission of a target irradiated by a laser can be sometimes used to calibrate detectors. X-ray calibration is mainly done in the continuous mode with synchrotron radiation because high intensity monochromatic radiation can be obtained. Such calibration results can be sometimes irrelevant as x-ray plasma diagnostics are operated in pulsed mode (for instance with CVD diamond detectors). At CEA-DIF we have a small picosecond laser facility called EQUINOX with 0.3 J at 800 nm. The laser is focused inside a target chamber on a solid target and produces intense radiation in the 100 eV - 2000 eV range. The x-ray source is routinely monitored with a pinhole camera for the source dimension measurement and with x-ray diodes for the total level flux. In addition an x-ray transmission grating spectrometers, a crystal spectrometer and a single count CCD camera measure the x-ray spectrum between 200 eV and 15 keV. The absolute calibration of those sets of spectrometers allows us full characterised x-ray emission spectra. Typical duration is less than 100ps The spectrum can be adjusted by changing the target material and by x-ray filters. Some examples of calibration will be shown, such as CVD diamonds. . .

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