

# Characterization of high brightness and multi-keV x-ray sources at the LMJ facility

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The Laser MégaJoule Facility (LMJ) currently delivers 270 kJ of UV laser energy on target with 80 beams (20 quads). Regime of hot dense matter can be achieved and very bright multi-keV nanosecond x-ray sources can be generated, for example for studying the x-ray interaction with materials. The characterization of the x-ray emission in terms of spectrum, fluence and power is essential and requires absolutely calibrated time-resolved x-ray diagnostics, sensitive to soft and hard x-rays above 10 keV. At LMJ facility, broadband x-ray spectrometers as DMX [1] or mini-DMX as well as narrowband spectrometer such as HRXS are fully operational. Recently, experiments with xenon [2], krypton and zirconium have been conducted, demonstrating our capability to produce intense x-ray sources between 2 and 30 keV and our capability to measure time-resolved fluences and spectra.

## References

[1] J.-L. Bourgade et al., Rev. Sci. Instrum. **72**, 1173 (2001).

[2] M. Primout *et al.*, Phys. Plasmas **29**, 073302 (2022).

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