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An Ultra Portable X-Pinch for Probing Warm Dense Matter[1]
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Determining the properties of Warm Dense Matter (WDM) necessitates the use of advanced X-ray based diagnostics including diffraction and absorption spectrometry. As many experiments that produce WDM do so for only a few ns, the probing X-rays must be short pulsed, ideally with a high enough yield to produce data on a single experiment. They must also have the correct spectral characteristics e.g. having a smooth continuum for absorption spectrometry. Such requirements often restrict experiments to large scale facilities like 3rd generation Synchrotrons and XFELs, which have exemplary capabilities, but can also have very limited time available. At Imperial College we have been developing several X-pinch based X-ray sources to provide a complementary capability to large facilities, with the aim of promoting in house WDM research at Universities. We report initial results from our latest X-pinch system Dry Pinch 2 that is extremely portable and made so that any researcher can use it with minimal training. From the outset Dry Pinch 2 has been designed to be easy to build and includes advanced features such as solid state triggering and inbuilt HV charging. It can utilize loads including an embedded gas jet that may negate the need for reloading wires in between experiments

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