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Report on the FELIX Wavelength Range Extension

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The FELIX Laboratory, located at Radboud University in Nijmegen, The Netherlands, is operating a suite of FELs serving an international user community with infrared and THz radiation from 5 to 1500 micron operating three FELs in parallel and providing beam to 16 dedicated user end stations. Recently, FELIX has upgraded its most frequently used FEL-2 beamline. The 38 period, 65 mm Halbach-type SmCo undulator, originally built for the UK-FEL project in the mid 80's, which had been successfully used for the short-wavelength FEL for almost 30 years, was replaced by a new undulator. This 50 period, 40 mm NdFeB hybrid undulator was built in close collaboration with STI magnetics and the FEL group of FHI/MPG in Berlin. Together with a new resonator cavity it allows an extension of the fundamental range from 5 μm to sub-3 μm , while keeping the desirable good spectral overlap with the longer wavelength FEL-1 branch. The upgraded FEL-2 beam line produced first light at the end of April 2022 and commenced serving regular user experiments in early May. Initial results concerning gain and wavelength range which are quite satisfactory will be presented together with the first user application.

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Yes

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