

## COMMISSIONING AND FIRST SCIENCE AT THE ESRF EBS

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Since 2015 the ESRF has prepared the replacement of its old storage ring based on the double-bend achromat lattice by the EBS storage ring based on the newly developed HMBA lattice with seven bending magnets per cell. During a long shutdown the EBS storage ring was installed in 2019 and went into its commissioning phase in December 2019. Despite the restrictions imposed by the COVID-19 pandemic, the EBS storage ring was successfully commissioned as the first 4<sup>th</sup> generation high energy synchrotron light source during the first six months in 2020. After the regular summer shutdown, the ESRF resumed its user operation at full current and nominal emittance as expected. The user programme was then ramped up quickly with all beamlines taking beam today.

The initial commissioning of the new EBS storage was performed in several steps during the first three months of operation at the end of which the design value of 200 mA for the beam current was reached. This was followed by four months of joint commissioning activities for the storage ring and the beamlines, interrupted by a complete shutdown of the entire facility during a nation-wide lockdown. Details on the commissioning of the EBS storage ring and the performance reached at the various steps will be presented.

The commissioning of the public ESRF and the CRG beamlines was drastically shortened by restrictions imposed by the COVID-19 pandemic. Nevertheless, we managed a quick restart and commissioning of the beamlines with the much brighter X-ray beams supplied by the new source. Nominal beam parameters could be confirmed early on in the process and the beamlines resumed user operation in September 2020 as planned. The expected improvement of the key beam parameters in terms brilliance, coherence and flux were confirmed across the entire beamline portfolio. To date more than 1000 user experiments have already been performed with first exciting scientific results already submitted for publications. Details on the commissioning of the beamlines and the performance reached will be presented together with early scientific results.