

## Application for the student session

**Presentation title:**

**Lattice Design for Future Plan of UVSOR**

**Abstract:**

We present a lattice design study based on double-bend achromat configuration, for a future plan of UVSOR, to achieve a low beam emittance at 1 GeV electron beam energy with stored beam current 300 mA. A storage ring of circumference 87.2 m providing 12 straight sections to install injection system, RF system and insertion devices is designed using the Elegant code [5]. At the first step, we surveyed the betatron tunes and mapped the emittance and the dynamic aperture on the tune diagram to seek a periodic solution that has low emittance and a sufficiently large dynamic aperture for beam injection. Based on the result, we found some solutions which have a small emittance around 5 nm with free dispersion function at straight sections. Moreover, we have studied Touschek scattering which limits the beam lifetime and intra-beam scattering (IBS) which tends to increase the equilibrium beam emittance.

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