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Study on XiPAF-upgrading synchrotron beam loss

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Xi'an 200MeV proton application Facility, as known as XiPAF, is upgraded to a heavy ion synchrotron, which replace H^- stripping injection with multiturn injection scheme. New synchrotron circumference is much bigger than original one for injection equipment installation space, which means that this heavy-ion lattice is much different from original proton lattice. Simulation is performed with pyorbit for resonance beam loss study, with or without space charge effect, the main beam loss is caused by 3-order incoherent resonance, i.e. $vx+2vy=6$, which is a structure resonance. Space charge and longitudinal synchrotron motion accelerate the beam loss process.

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Footnotes

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Primary author: LIU, Xiaoyu (Tsinghua University in Beijing)

Co-authors: YAO, Hongjuan (Tsinghua University in Beijing); ZHENG, Shu-xin (Tsinghua University in Beijing); WANG, Xuewu (Tsinghua University in Beijing); LI, Yan (Tsinghua University in Beijing); XIONG, Yang (Tsinghua University in Beijing); YUAN, Yaoshuo (Chinese Academy of Sciences); WANG, Zejiang (Tsinghua University in Beijing)

Presenter: LIU, Xiaoyu (Tsinghua University in Beijing)

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