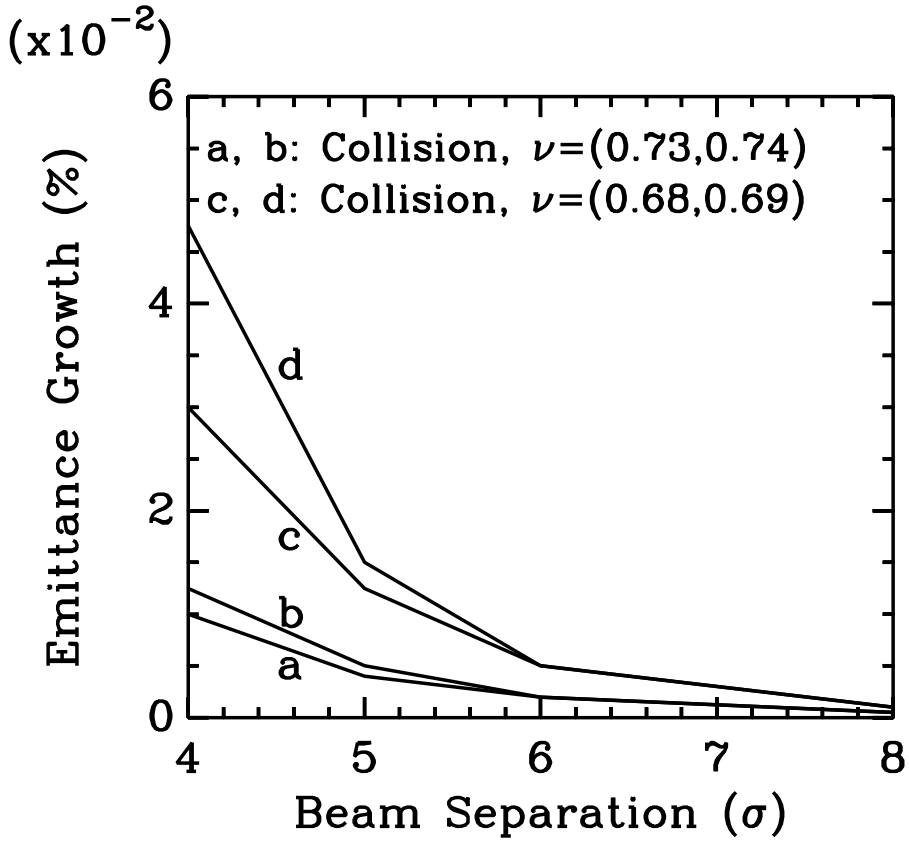


Figure 1. Emittance Growth at $10^5$ turns *vs.* beam separation at the parasitic crossing ($s = 9m$) in the RHIC collision lattice. (a) Yellow beam with $(\nu_x, \nu_y) = (28.73, 29.72)$, (b) Blue beam with $(\nu_x, \nu_y) = (28.72, 29.73)$, (c) Yellow beam with $(\nu_x, \nu_y) = (28.69, 29.68)$, and (d) Blue beam with $(\nu_x, \nu_y) = (28.68, 29.69)$.

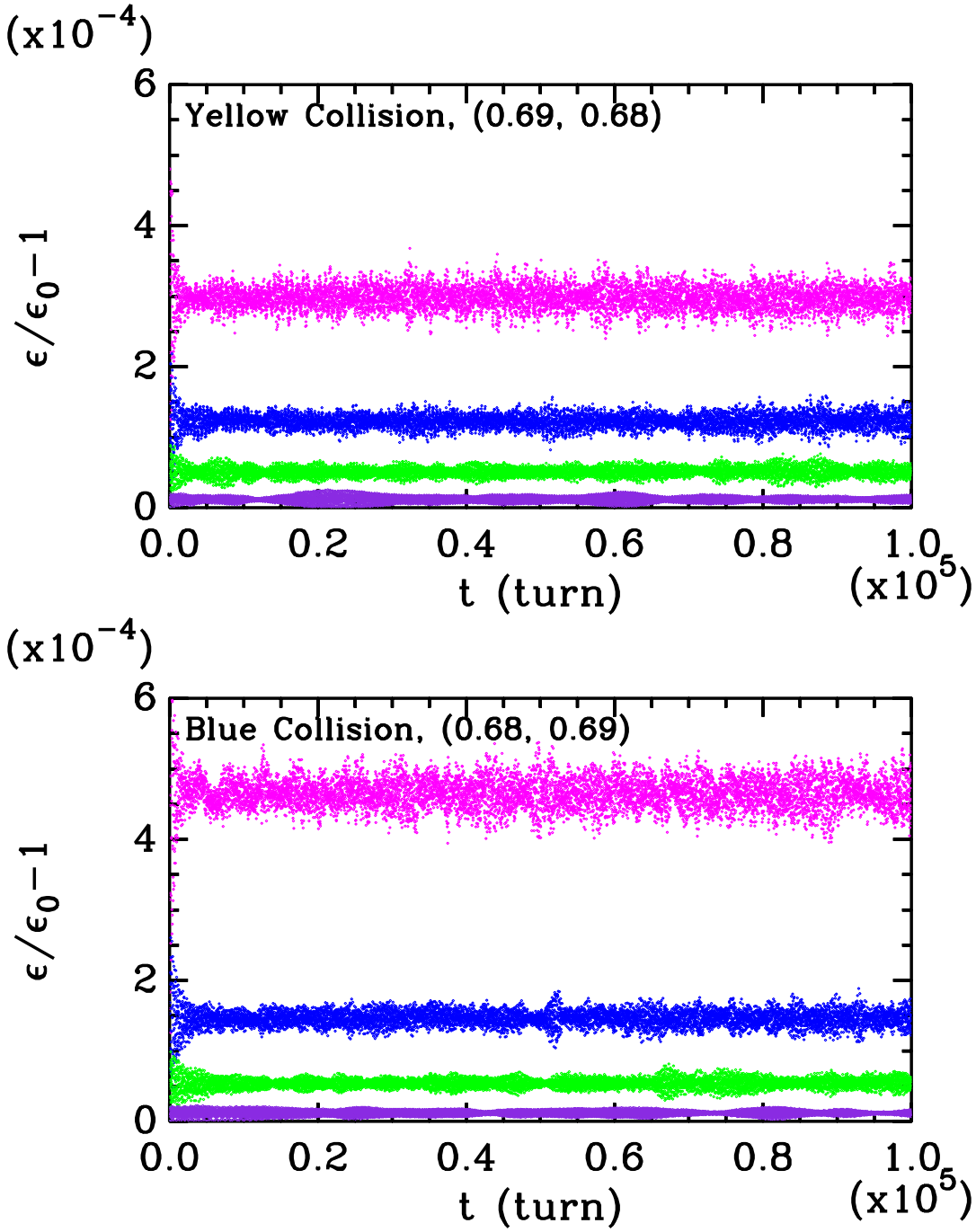


Figure 2. Evolution of Emittance in the RHIC collision lattice with different vertical beam separation at the parasitic crossing ($s = 9m$). $(\nu_x, \nu_y) = (28.68, 29.69)$. The vertical beam separation is 8, 6, 5, and 4 $\sigma$ for the purple, green, blue, and red curve, respectively.

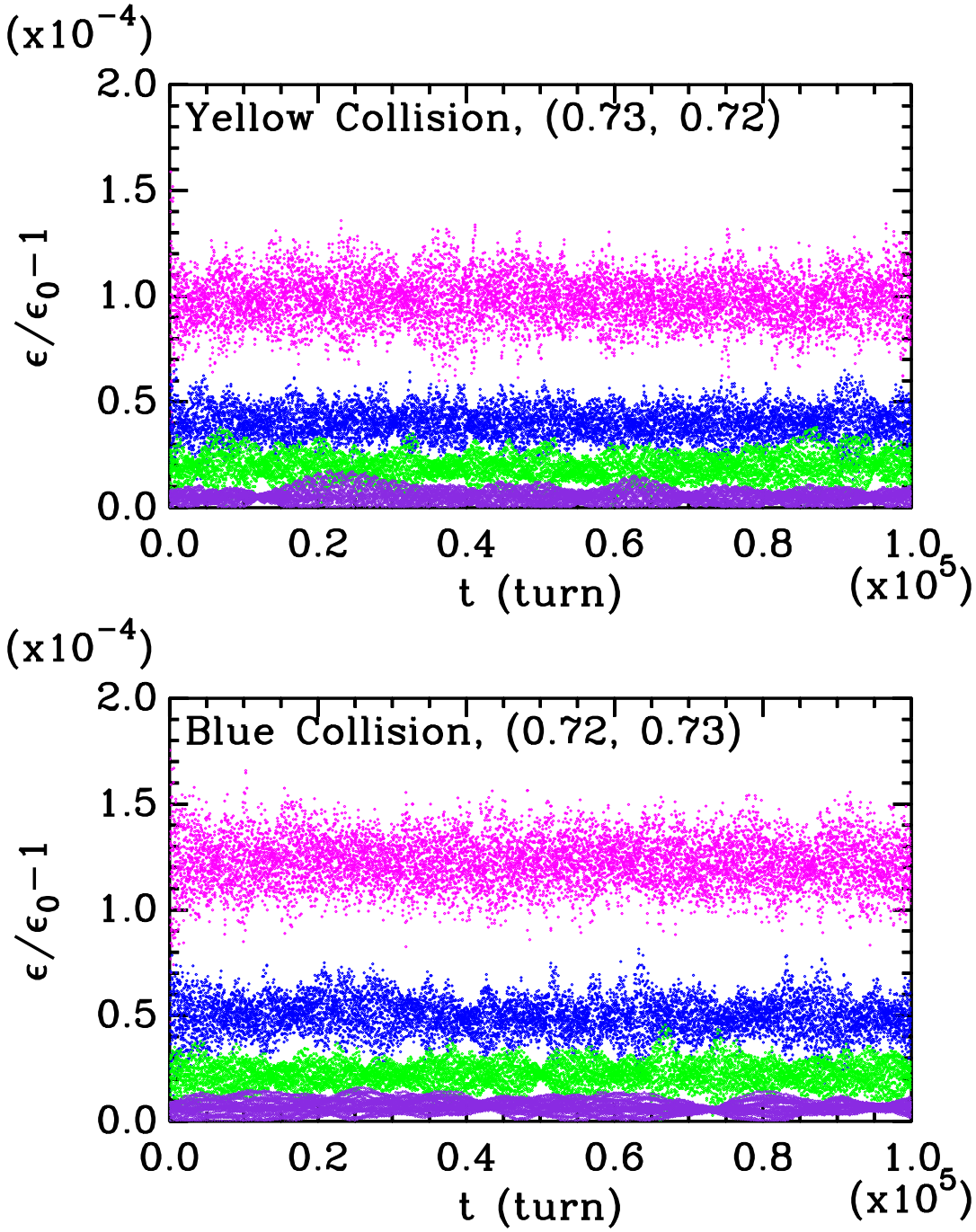


Figure 3. Evolution of Emittance in the RHIC collision lattice with different vertical beam separation at the parasitic crossing ($s = 9m$). $(\nu_x, \nu_y) = (28.72, 29.73)$. The vertical beam separation is 8, 6, 5, and 4 $\sigma$ for the purple, green, blue, and red curve, respectively.

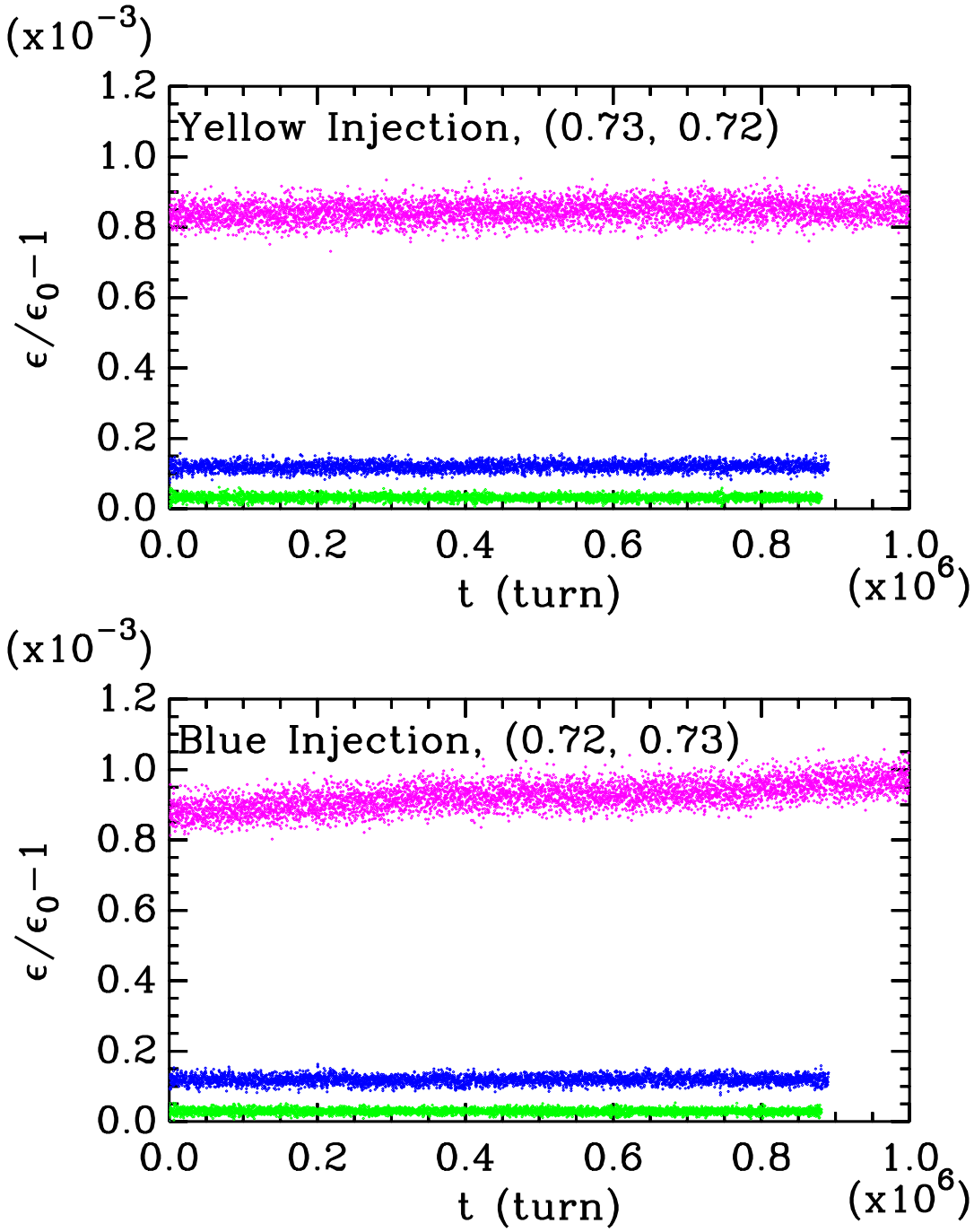


Figure 5. Evolution of Emittance in the RHIC injection lattice with different vertical beam separation at the parasitic crossing ($s = 9m$). $(\nu_x, \nu_y) = (28.72, 29.73)$. The vertical beam separation is 6, 4, and 2 $\sigma$ for the green, blue, and red curve, respectively.