Some References (JUAS 2018)

[1.1] E.D. Courant, M.S. Livingston, H.S. Snyder, *The strong-focusing synchrotron – new high energy accelerator*, Phys. Rev., 88 (Dec. 1952), 1190-6.

[1.2] E.D. Courant, H.S. Snyder, *Theory of the alternating gradient synchrotron*, Annals of Physics, vol. 3, (1958), p1-48.

[1.3] K.G. Steffen, *High energy optics*, (Interscience Publishers, Division of Wiley & Sons, 1965),17-20

[2.1] R. Chasman, G.K. Green, E.M. Rowe, *Preliminary design of a dedicated synchrotron radiation facility*, Proc. 1975 Part Accel. Conf., Washington, IEEE Trans. Nucl. Sci. Vol. NS-22, No. 3 (June 1975, 1765-7.

[2.2] R. Brinkman, *Insertions*, Proc. CERN Accelerator School, 2nd General Accelerator Physics Course, Aarhus, 1986, CERN 87-10 (July 1987), 45-61.

[3.1] J.P. Blewett, *200 GeV intersecting storage accelerators*, 8th Int. Conf. on High-Energy Accel., CERN, 1971,501-4.

[3.2] R.E. Shafer, B. Blind; E.R. Gray, J.D. Gilpatrick, D. Barlow; G.P. Lawrence, *Overview of the APT High-Energy Beam Transport and Beam Expanders*, 17th Particle Accelerator Conference, Vancouver, Canada, 12 - 16 May 1997, pp.83.

[3.3] E. Young et al, PAC 97 and E.Young, PhD thesis Cornell U. 1997.

[3.4] L.R. Evans, *A phase plane exchange section for the SPS antiproton injection beam line*, CERN/SPS-DI(MST)/80-2, (1980).

[3.5] L.C. Teng, Private Communication, Laboratory notebook (Jan. 1970) and Int Rep. LL-134 (Oct. 1986).

[3.6] T. Collins, CEA-86 (1961).

[4.1] B. Autin, Y. Marti, Closed orbit correction of A.G. machines using a small number of magnets, CERN ISR-MA/73-17 (March 1973).

[6.1] K. Wille, *The Physics of particle Accelerators-An introduction*, (Oxford University Press 2000).

[6.2] R. Chasman, G.K. Greene, E.M. Rowe, Proc. 1975 Part. Accel. Conf. Washington, 1975, IEEE Trans. Nucl. Sci., Vol. NS-22, No. 3 (June 1975), 1765-7.

[6.3] H. Zyngier, *Stratégie pour la correction de chromaticité*, Report LAL 77-35 (Nov. 1977).

[6.4] J. Buon, *A statistical description of a particle beam subjected to a linear coupled betatron motion*, LAL/RT 96-03, (April 1996).

[6.5] J. Buon, *Beam phase space and emittance*, LAL/RT 92-03, (February 1992). Revised version of LAL/RT 90-15.

* * *

Relativity formulæ

$\beta = \frac{v}{c}$ and $\gamma = \frac{m}{m_0}$ and $\gamma = \frac{1}{\sqrt{1-\beta^2}}$ so that $\beta\gamma = \sqrt{\gamma^2 - 1}$ and $\mathrm{d}\gamma = \gamma^3 \beta \,\mathrm{d}\beta$.

$E = m_0 \gamma c^2$ and $\mathrm{d}E = m_0 c^2 \gamma^3 \beta \,\mathrm{d}\beta$ so that $\frac{\mathrm{d}E}{\mathrm{E}} = \gamma^2 \beta^2 \frac{\mathrm{d}\beta}{\beta}$.

$p = m_0 \gamma \beta c$ and $\mathrm{d}p = m_0 c \gamma^3 \mathrm{d}\beta$ so that $\frac{\mathrm{d}p}{\mathrm{p}} = \gamma^2 \frac{\mathrm{d}\beta}{\beta}$ finally $\frac{\mathrm{d}p}{\mathrm{p}} = \frac{1}{\beta^2} \frac{\mathrm{d}E}{E}$.

$E = m_0 \gamma c^2$ and $p = m_0 \gamma \beta c$ so that $\beta E = cp$ and $E\,\mathrm{d}\beta + \beta\,\mathrm{d}E = c\mathrm{d}p$ finally $\mathrm{d}E = c\beta\,\mathrm{d}p$.

$E = \sqrt{{E_0}^2 + c^2 p^2}$ and $E_0 = m_0 c^2$ and $E = T + E_0$.

* * *