Title

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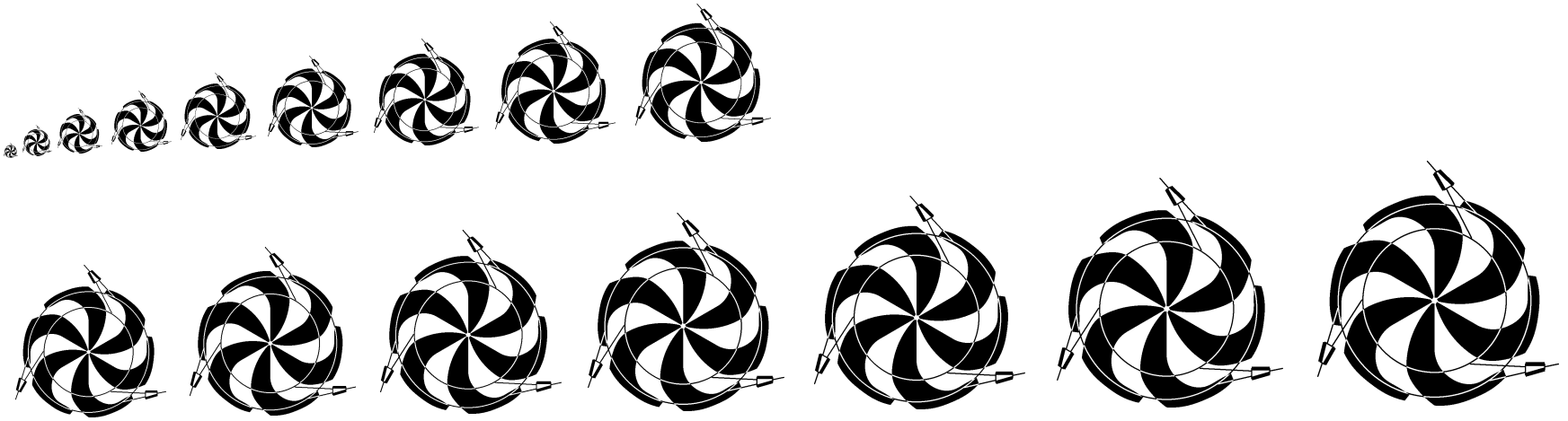
Introduction

The TRIUMF logo is a font. There are 16 logos of different sizes, corresponding to digits 1 through 9 and then upper case A through G:



Why? As a font, the logos stay sharp at any magnification, just as text does.

This gives you opportunity to use them in text as well, as in “l g”.

Abstract

DAEδALUS (Decay-At-rest Experiment for δ_{CP} studies At the Laboratory for Underground Science) provides a new approach to the search for CP violation in the neutrino sector. High-power continuous-wave proton cyclotrons efficiently provide the necessary proton beams with an energy of up to 800 MeV to create neutrinos from pion and muon decay-at-rest. The experiment searches for $\bar{\nu}_\mu \rightarrow \bar{\nu}_e$ at short baselines corresponding to the atmospheric Δm^2 region. The $\bar{\nu}_e$ will be detected via inverse beta decay. Thus, the cyclotrons will be employed at a future ultra-large gadolinium-doped water or scintillator detector.

In this paper we address the most challenging questions regarding a cyclotron-based high-power proton driver in the megawatt range with a kinetic energy of 800 MeV. Aspects of important subsystems like the ion source and injection chain, the magnet design and radio frequency system will be addressed.

Precise beam dynamics simulations, including space charge and the stripping process, are the base for the characterization and quantification of the beam halo–one of the most limiting processes in high-power particle accelerators.