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## New dual frequency RF system for Cyclone 30XP

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The IBA famous Cyclone 30 has been recently upgraded in order to not only accelerate protons but also deuterons and alpha particles. For efficient acceleration and easier central region design all the particles are accelerated along the same turn pattern, on the same harmonic mode. Consequently, the RF cavities must be resonating on two different frequencies. In order to provide a simple, reliable and cost effective design, a patented cavity design without sliding RF contacts has been implemented. It allows switching from 34MHz to 68 MHz with no cavity geometrical change and no moving parts.

To provide RF power to the system a new 40kW tetrode based amplifier has been designed. It uses the same principles and has therefore no mobile elements to switch from one frequency to the other. The use of a high performance vacuum tube provide a fairly high gain in cathode driven operation that allows the amplifier to be easily driven by a small broadband solid-state amplifier.

In this communication, the calculation method, design optimization and obtained results are presented.

### Please indicate preferred presentation (poster or talk?)

talk

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