An effort is underway to determine if a Fixed Feld Alternating gradient permanent magnet array may be used to increase the energy of the CEBAF electron beam to ~22 GeV, delivered to the three original halls. The civil construction was designed to accommodate 16 GeV maximum. While there is room in the arcs to deal with the needed magnet length, yielding 86% fill factor, the spreaders, recombiners and extraction regions are much more limited. There are five types of septum magnets employed in these regions, four current sheets and one Lambertson-style. The latter may be extended in length and will not be discussed further. Basic parameters of the four current sheets are given in the table below. All four are running at very high current densities in the copper; they can have neither current density nor length increased to deal with the proposed doubling of energy.

Inspired by two recent arxiv postings [1.2], one of the proposers realized that conductively cooled MgB2 or REBCO SC magnets would allow for thinner septa at more than double the present current density and double the BdL. It is proposed that BNL take the lead in prototyping such a magnet, with JLab providing interface details so that the prototype may be installed in CEBAF and operated with beam. A dedicated power supply should be assumed.

Magnet	**Steel length (cm)**	**Turns**	**Amps**	**∫BdL (G-cm)**	**|B| (G)**	**J (A/mm2) in copper**	**Stainless bet. beams (cm)**
YA	100	5	70	35050	350	30	0.9
YB	96.1	24	447	515680	5367	27.8	3.28
YR*	194.8	24	688	1535720	7883	42.8	5.06
ZA*	298.2	24	814	2753440	9234	47.7	3.36

*The YR and ZA have curved septum coils and steel, back legs straight. Straight steel length given.

The ZA must have increased length as well as larger amp-turns as the steel will soon begin to saturate. It may be possible to push the YR steel to 1.6 T, maintaining length, but a 20% increase in length would be prudent. The fields in the steel of the YA and YB are low enough that doubling the field is not an issue. A magnetic model of the YR is presented in [3].

[1] Akira Yamamoto and Amalia Ballarino, Advances in MgB 2 Superconductor Applications for Particle Accelerators, https://arxiv.org/abs/2201.09501
[2] European Strategy for Particle Physics Accelerator R&D Roadmap, Section 2 High-field magnets https://arxiv.org/abs/2201.07895
[3] J. Benesch, FEM models and Fourier decomposition of three thick septa *JINST* **13** T11001 https://iopscience.iop.org/article/10.1088/1748-0221/13/11/T11001/meta