

Lawrence Berkeley National Laboratory

Recent Work

Title

Mechanical support and assembly of long Nb₃Sn accelerator magnets using key and bladder technology

Permalink

<https://escholarship.org/uc/item/34d330td>

Authors

Bartlett, S.E.
Caspi, S.
Dietderich, D.R.
et al.

Publication Date

2004-04-14

**Mechanical Support and Assembly of Long Nb₃Sn Accelerator Magnets
Using Key and Bladder Technology**

S.E. Bartlett, S. Caspi, D.R. Dietderich, P. Ferracin, S.A. Gourlay, C.R. Hannaford, A.R.
Hafalia, A.F. Lietzke, S. Mattafirri, G. Sabbi
LBNL, Berkeley, CA

The Superconducting Magnet Group at LBNL has developed an innovative support structure for high field magnets. The structure is based on an aluminum shell over iron yokes using hydraulic bladders and locking keys for applying the pre-stress. This new structure allows precise control of the pre-stress with minimal spring back and conductor over-stress. At present the support structure has been used with prototype magnets up to one meter in length. In this paper we are investigating the use of this technology in long magnets. The technical challenges of manufacturing long structural components and handling brittle coils will be discussed.

*Supported by the U.S. Department of Energy under Contract No. DE-AC03-76SF00098.