Numerical reconstruction of spontaneous helical equilibria in RFX-mod M. GOBBIN, Consorzio RFX, Padova, Italy, A.H. BOOZER, PPPL, Princeton, NJ, USA, S.P. HIRSCHMAN, ORNL, Oak Ridge, TN, USA, L. MARRELLI, Consorzio RFX, Padova, Italy, N. POMPHREY, PPPL, Princeton, N, USA, D. TERRANOVA, Consorzio RFX, Padova, Italy — The Reversed Field Pinch (RFP) plasmas can spontaneously access regimes in which a single mode dominates the magnetic perturbation spectrum (Quasi Single Helicity, QSH) [1]. For sufficiently large values of the dominant mode the magnetic island separatrix is expelled and a helical magnetic axis appears. This regime is called SHAx (Single Helical Axis) and is characterized by a helically symmetric plasma, with the periodicity of the dominant mode [2]. In order to describe the SHAx regime, the VMEC code has been adapted to the RFP configuration by using as flux coordinate the poloidal flux instead of the toroidal flux. In this work we present the first results obtained with the VMEC code reproducing the magnetic topology of a SHAx plasma in a fixed boundary approach by providing as input the safety factor profile, the shape of the last closed flux surface and taking into account also the effect of pressure.

[1] P.Martin et al., Plasma Phys. Control. Fusion 49 (2007) A177-A193
[2] R. Lorenzini et al., to be published on Nature Physics, DOI 10.1038/NPHYS1308

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