

Abstract Submitted  
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**Self-Similar Current Decay experiments in RFX-mod** PAOLO ZANCA, SERGIO ORTOLANI, ANTONIO DE LORENZI, FULVIO AURIEMMA, RITA LORENZINI, ALBERTO ALFIER — The Self-Similar Current Decay (SSCD) is a promising procedure to run a reversed field pinch (RFP) discharge. Proposed in a theoretical work by R. Nebel et al (Physics of Plasmas Vol. 9, n.12, (2002) pag 4968) it is a method to decrease the dynamo request and the associated level of magnetic fluctuations thereby improving the RFP global plasma parameters. The concept is that a suitable fast decaying (rate about  $6\tau_R$ ) of the magnetic field with fixed radial profile allows the reversed field pinch to exist in the cylindrical dynamo-free state. This decay can be induced by forcing the total plasma current and toroidal flux to decrease with the same temporal law. The decay is obtained by applying suitable poloidal and toroidal voltages at the plasma edge. In particular the toroidal voltage reverses its sign becoming negative. Here we present the results of the first SSCD experimental campaign operated in RFX-mod. Some interrelated beneficial effects have been clearly obtained: mode amplitudes reduction, steepening of the temperature profiles and unexpectedly long pulse duration.

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