

Abstract Submitted
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Plasma surface and wall eddy currents and their connection to Halo currents during disruptions in tokamaks VADIM YANOVSKIY, ROBERTO PACCAGNELLA, Consorzio RFX — The behaviour of plasma surface currents and resistive wall eddy currents is analysed analytically within a cylindrical model for pressureless ideal plasma with flat and parabolic equilibrium current profiles. This mimics possible conditions in tokamak plasmas during disruptions between the thermal and the current quench phases. Earlier studies [1, 2] predict that plasma surface currents have to be taken into account for explanation of the Halo currents intensity and distribution. Our results show that this is true only in a very narrow window of edge safety factor q_a and that in a wide region of q_a the wall eddy currents are comparable or much larger than the plasma skin currents. The study reveals ranges of plasma and wall parameters for which the surface currents could play a role in Halo currents dynamics. Some comparison of the results with previous works [1, 2] on this topic is also presented.

[1] Zakharov L 2008 *Phys. Plasmas* **15** 062507

[2] Zakharov L 2011 *Phys. Plasmas* **18** 062503

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