Current filaments in magnetized plasmas N. VIANELLO, M. SPOLAORE, E. MARTINES, M. AGOSTINI, R. CAVAZZANA, P. SCARIN, M. ZUIN, Consorzio RFX, Euratom-ENEA, Padova, Italy, V. NAULIN, J.J. RASMUSSEN, Risø/DTU, Denmark, R. SCHRITTWIESER, C. IONITA, ÖAW-Euratom, Innsbruck, Austria, H.W. MÜLLER, V. ROHDE, IPP, Euratom, Garching, Germany, I. FURNO, C. THEILER, CRPP-EPFL, Euratom Confederation Suisse, Lausanne, Switzerland — We present direct experimental evidence of the presence of filamentary current structures in turbulent magnetized plasmas. Experiments have been performed in different devices. In the the reversed field pinch RFX-mod device, small scales turbulent intermittent structures, have been interpreted as Drift-Kinetic Alfvén vortices, resulting from the non-linear coupling of drift and Kinetic Alfvén waves, with a bipolar current filaments associated to a vorticity perturbation. In the ASDEX Upgrade tokamak evidences of monopolar current filaments travelling in the SOL, have been observed in correspondence with type-I ELMs. An evaluation of the current carried by individual ELMs is presented. Finally preliminary direct measurements of the 2D structure of the blob-induced parallel current using magnetic probes, as obtain in the simple magnetized plasma TORPEX, will be presented.