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Shot noise in double barrier epitaxial magnetic tunnel junctions FARKHAD ALIEV, JUAN PEDRO CASCALES, DAVID HERRANZ, ANDRES GOMEZ-IBARLUCEA, Universidad Autonoma de Madrid Spain, CORIOLAN TIUSAN, MICHEL HEHN, AMANDINE DULLUARD, CHRISTINE BELLOUARD, Nancy-Universite France, TOMASZ SZCZEPANSKI, VITALII DUGAEV, Rzeszow University of Technology Poland, JOZEF BARNAS, Adam Mickiewicz University Poznan Poland — Shot noise has been shown to be an effective tool to study statistics of electron tunnelling in single barrier magnetic tunnel junctions [1-2]. Here we report on shot noise and tunnelling magnetoresistance measurements in fully epitaxial Fe/MgO/Fe/MgO/Fe double barrier magnetic tunnel junctions. We observed that the shot noise is essentially determined by the barriers' symmetry and relative magnetic configuration. Enhanced barrier asymmetry effectively suppresses electron correlations, and the noise approaches the Poissonian limit. The proposed model of sequential tunnelling (with spin relaxation) through the magnetic layer inside the tunnel barrier satisfactorily explains the experimental observations. [1] R.Guerrero, et al., Phys. Rev. Lett. 97, 0266602 (2006). [2] R.Guerrero, et al, Appl. Phys. Lett. 91, 132504 (2007).

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