MAGNETIC FABRICS OF ARAGUAINHA IMPACT STRUCTURE (CENTRAL BRAZIL): IMPACT PRODUCTS AND COLLAPSE HISTORY IN THE CENTRAL PEAK-RING. [1]E. Yokoyama; [1]R. I. F. Trindade; [2]C. C. Lana; [1]Y.R.Marangoni; [3]E.Tohver; [1](Instituto de Astronomia Geofisica e Ciencias Atmosfericas - USP, Rua do Matao 1226, Sao Paulo, SP 05508-090, Brazil ; elder@iag.usp.br), [2](Department of Geology - University of Stellenbosch, Private Bag X1-Matieland, Stellenbosch, WC 7620, South Africa ; lana@sun.ac.za), [3](School of Earth and Geographical Sciences Perth-University of Western Australia, 35 Stirling Highway, Crawley, WA 6009, Australia ; etohver@cyllene.uwa.edu.au).

Introduction: A meteorite impact hit central Brazil ca. 250 Ma ago, just prior to the Permo-Triassic boundary, leaving a 40 km wide complex impact structure (the largest impact structure identified in South America)[1,2]. It is a well-preserved and shallowly eroded crater, that provides unparalleled opportunity to study the kinematics of peak-ring crater formation.

Results: This crater developed on sediments of the intracratonic Paraná basin. The impact has excavated more than 2 km of the original sedimentary pile, bringing to the surface granites and host metamorphic rocks of the basement after collapse. It comprises a central peak ring, annular basin, two main ring features and deformed rims. Field observations and petrographic studies in impact-related materials inside the central peak ring allow recognition of four lithofacies (metamorphic basement, cataclastic porphyritic-granite, impact melts and polymitic breccias) that record different magnetic fabrics. Cataclastic porphyritic granite record the crater collapse fabric orientation, whereas the other rocks record a process after crater collapse, comprising molten rocks covered by breccias.

Conclusion: The comparison of available models of collapse of craters complex with these observations show, for the first time, that the crystalline embasament may have acquired hydrodynamic behavior during the process of collapse.

References: [1] Engelhardt et al. (1995), Meterotics and Planetary Science. [2] Lana et al. (2007), GSA Bulletin.