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Paleomagnetic study of Egyptian crystalline rocks to better understand the geologic evolution of Egypt

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The crystalline bedrock geology of Egypt is exposed over more than ten-percent of the surface of the country, and it is rich with a variety of rocks that were formed in various geologic environments. It includes Precambrian-age basement rocks consisting of gneisses, granites, meta-volcanics, meta-sediments, and volcanics, as well as younger post-Precambrian volcanic rocks. Although the geology of the Egyptian crystalline bedrock is generally well described, debate still exists over the geologic and tectonic history captured in the rocks. However, to understand how and when these processes affected the Egyptian basement rocks the timing and style of the geologic events must be known through careful paleomagnetic and geochronologic studies. Unfortunately, few modern geochronologic and paleomagnetic data exist for Egyptian rocks, and for the data that do exist, there are inconsistencies. We propose to conduct a modern paleomagnetic and geochronology study of the crystalline bedrocks of Egypt. $^{40}Ar/^{39}Ar$ age and Paloemagnetic study for the Early Paleozic rocks from Wadi Hafafit area, Eastern desert of Egypt will be presented in this study. Detailed rock magnetic investigations including the variation of magnetization with temperature and hystersis loops shows that pseudo single domain (PSD) grain size magnetite is the main magnetic mineral in the studied rocks. Alternating field and thermal demagnetization identify stable and unstable characteristic remanences.