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Hot spots around Sgr A*: model constraints from ALMA polarimetric observations

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I will report on the polarized light curves of the Galactic Center supermassive black hole Sagittarius A, obtained at millimeter wavelength with the Atacama Large Millimeter/submillimeter Array. The observations took place as a part of the Event Horizon Telescope campaign. We compare the observations taken during the low variability source state on 2017 Apr. 6 and 7 with those taken immediately after the X-ray flare on 2017 Apr. 11. For the latter case, we observe rotation of the electric vector position angle with a timescale of ~ 70 min. We interpret this rotation as a signature of the equatorial clockwise orbital motion of a hot spot embedded in a magnetic field dominated by a dynamically important vertical component. We postulate that Sgr A is surrounded by a magnetically arrested disk in which the observed hot spots are exhausts of reconnection events. I will highlight possibilities to use these new findings to learn more about collisionless plasma in advection dominated accretion flows.

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