The geometry of SMC X-2 from *Polestar*

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SMC X-2 is one of the brightest pulsars in the Small Magellanic Cloud (SMC) with a maximum known X-ray luminosity of $L_X = 4.0 \times 10^{38}$ erg s^{-1}. This transient Be/X-ray pulsar with a spin period of $P_{spin} = 2.37$ s and an orbital period of $P_{orb} = 18.62 \pm 0.02$ days last underwent a Type-II outburst in 2015. Following its detection by *MAXI*, simultaneous observations were carried out by *Swift*, *XMM-Newton*, and *NuSTAR* throughout the outburst phase extending for up to two months. Its spectra showed a dominant hard cutoff power law along with additional soft blackbody and thermal components. The source is one of few SMC pulsars in which the propeller state was observed and a cyclotron resonance feature was detected at $E \sim 27$ keV. The onset of the propeller regime causes dramatic changes in the accretion state and the neutron-star magnetosphere. This serves as impetus for trying to model the observed pulse profiles in various accretion states in order to deduce the geometry of the emitting regions. For this analysis, we use the geometrical pulse-profile modeling code *Polestar*. The pulsar exhibited a double-peak pulse profile during its previous giant outburst in 2000. In the 2015 data, we confirm the presence of a double peak during outburst, but there are also some profiles with a single broad peak. The pulse profile evolution from double to single peak probably indicates changes in the emission mechanism that can be traced by *Polestar*. This modeling effort will help us pinpoint the geometry of the emission and understand the energy and accretion changes as the source evolves past outburst and toward lower luminosity states.