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EWOCS: The X-ray properties of the largest Galactic group of Wolf-Rayet stars in the young and massive star cluster Westerlund 1

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Wolf-Rayet (WR) stars are the latest stage in the evolution of very massive stars, before they eventually explode as supernovae (SN) or possibly gamma-ray bursts. They exhibit dense and powerful stellar winds that, along with their ultimate death as core-collapse SN, dominate the feedback to the local interstellar medium in star-forming galaxies. Studying in more detail the properties of the short-lived WR phase, will advance our understanding on star-formation processes and will test stellar evolutionary predictions. The ideal laboratory to investigate the WR phase is the massive young star cluster Westerlund 1. It is the closest massive star cluster to the Sun, and it contains an impressive large sample of coeval massive stars including the largest population (24) of WR stars in our Galaxy. In this meeting, I will present the results of the EWOCS (Extended Westerlund 1 and 2 Open Clusters Survey) project on the WR stars in Westerlund 1 based on a 1Msec Chandra/ACIS-I Large Project. Through this comprehensive Chandra survey, we can unveil the X-ray spectral, and timing properties of the entire WR population, shedding light on their X-ray production mechanism. We will discuss these results in the context of different spectral subtypes of WR stars, as well as their binarity. This is particularly relevant as the majority of these stars show clear signs of very hot plasma produced in the colliding-wind region of a binary system, contributing to a broader understanding of their formation pathway.