Rain, Hail, and Drip frames of the Schwarzschild-de Sitter Geometry TEHANI FINCH, James Madison University — Various families of coordinate systems associated with observers moving inwardly along radial geodesics in the Schwarzschild geometry have been constructed by generalizing the Painleve-Gullstrand coordinates. Such observers have categorized as being in the rain frame, a hail frame, or a drip frame, by Taylor and Wheeler. This framework naturally progresses into a search for counterparts of these coordinate systems for the Schwarzschild-de Sitter (SdS) geometry. Consideration of local measurements made by a fiducial observer suggests that the conserved Killing quantity which best fits the designation of "energy" in the SdS geometry differs from the one which is typically denoted as such. This leads to Painleve-Gullstrand-style coordinate systems for the SdS geometry that differ from the nave extrapolations of the Schwarzschild or de Sitter geometries.

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