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Heintze-Karcher inequality and capillary hypersurfaces in a wedge

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Abstract. In this paper, we utilize the method of Heintze and Karcher to prove a "best" version of a Heintze-Karcher-type inequality for capillary hypersurfaces in the half-space or in a wedge. One of the new crucial ingredients in the proof is the use of modified parallel hypersurfaces, which are very natural to be used in the study capillary hypersurfaces. A more technical part is a subtle analysis along the edge of a wedge. As an application, we completely classify embedded capillary constant-mean-curvature hypersurfaces that intersect the edge of a wedge, which is a subtler case.

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