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*Existence of constant mean curvature 2-spheres*

Constant mean curvature (CMC) surfaces arise in many different contexts and are natural generalizations of minimal surfaces. An important question is finding CMC surfaces with controlled topology in 3-manifolds. In this talk, I'll describe joint work with Xin Zhou (Cornell), in which we address the genus-zero case, where the surface sought after is a sphere. Our main result is that in an arbitrary Riemannian 3-sphere, for almost every  $H$  there exists a branched immersed 2-sphere with constant mean curvature  $H$ . Moreover, the existence extends to all  $H$  when the Riemannian 3-sphere has positive Ricci curvature.