

TEMPLE MATH CLUB's

Christian Millichap

presents

A Visual Tour of Low-Dimensional Manifolds

MANIFOLDS ARE SPACES THAT LOCALLY LOOK LIKE EUCLIDEAN SPACE. SUCH OBJECTS ARISE IN MATHEMATICS IN A VARIETY OF FORMS: CURVES, THE SURFACE OF A DOUGHNUT, THE SOLUTION SPACE OF SOME SET OF CONDITIONS, AND EVEN THE SPACE SURROUNDING A KNOT. IN FACT, THE UNIVERSE WE LIVE IN IS AN EXAMPLE OF SOME 3-DIMENSIONAL MANIFOLD! IN THIS TALK, WE WILL EXAMINE DIFFERENT WAYS TO CONSTRUCT 1-DIMENSIONAL AND 2-DIMENSIONAL MANIFOLDS. WE WILL ALSO CONSIDER HOW TO DISTINGUISH ONE MANIFOLD FROM ANOTHER. AFTERWARDS, WE WILL JUMP INTO THE STRANGE WORLD OF 3-DIMENSIONAL MANIFOLDS. 3-DIMENSIONAL MANIFOLDS ARE OFTEN DIFFICULT TO VISUALIZE, BUT CAN BE BETTER UNDERSTOOD BY IMAGINING WHAT IT IS LIKE TO LIVE INSIDE OF ONE. THROUGHOUT THIS TALK, LOOKING AT EXAMPLES AND USING VISUAL INTUITION WILL BE OUR MAIN TOOLS FOR UNDERSTANDING MANIFOLDS.

FRIDAY OCTOBER 17 @ 1:00

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