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ABSTRACT BOOK

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This is to certify that Dr. /Mr. /Ms. Anamika Singh of Reena Mehta College, Bhayandar has Participated / Presented paper entitled Mobius Band surprise: A systematic illusion in imagery in the Two days International Conference ICRACBS-2022 on 25th and 26th September 2022 organized by IQAC, Department of Chemistry and Biological Sciences.

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Möbius Band Surprise: A Systematic Illusion in Imagery

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Abstract:

When a Möbius loop is cut along the middle of the band, the result is a single connected loop, yet anecdotal evidence from science demonstrations and the use of this effect in magic tricks suggest that most people are thoroughly surprised by this because they strongly believe that the result should be two separate loops. Here, we present results from a behavioral experiment confirming this anecdotal evidence and discuss potential theoretical explanations for why this demonstration evokes strong, but misleading intuitions and a related illusion of impossibility.

The well-known Möbius band, which can be obtained by joining the two ends of a paper strip to a loop after twisting one of the ends by 180 degrees, has many curious and counterintuitive properties. One of these is that if you cut the band along the middle all the way around the loop, you end up with a single unbroken loop rather than two separate loops. A Möbius strip of half-width w with mid circle of radius R and at height Z = 0 can be represented parametrically by

$$X = [R + s\cos(1/2t)]\cos t \quad (1)$$
$$Y = [R + s\cos(1/2t)]\sin t \quad (2)$$
$$Z = s\sin(1/2t),$$

Keywords:

Möbius band, magic trick, visual imagery, spatial reasoning, connectedness, attribute substitution, cognitive illusion, cognitive failure *etc.*