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Constraining the gravitational potential in shell elliptical galaxies

Poster Abstract: We present the shell identification method for constraining the gravitational potential of elliptical galaxies possessing axially symmetric stellar shell systems. Such systems predominantly come from almost radial minor mergers. The shells are made of stars near their apocenters, so that they bring information about the host galaxy's potential. For a given potential, we are able to calculate the shell radii at any time after the merger. The shell identification method uses this fact to test the consistency of the observed shell radial distribution with a given potential. We used this method to the galaxy NGC 3923 to verify the MOND modified gravity theory. Supposing that MOND works well in the ellipticals (like in the disc galaxies), we derived that the shells were created 2.7 Gyr ago and predicted that an as yet undiscovered giant shell should lie 2000" SW from the galaxy's center. Investigation of the galaxy's dark matter halo assuming the standard gravity is planned.