

## **Barlenses and their connection to boxy/peanut/X-shape bulges**

E. Laurikainen and H. Salo

Astronomy research group, P.O. Box 3000, FIN-90014 University of Oulu, Finland  
email: [eija.laurikainen@oulu.fi](mailto:eija.laurikainen@oulu.fi)

Barlenses are morphologically lens-like structures embedded in bars, although in the literature they are generally associated to classical bulges. It has been suggested recently (Laurikainen et al. 2014, Athanassoula et al. 2015) that barlenses are actually the face-on counterparts of boxy/peanut/X-shape bulges in the edge-on view. If that is the case most of the bulge mass even in the Milky Way mass galaxies might be secularly organized to the central regions of galaxies. We have observationally compared the properties of barlenses and X-shape bulges in a large galaxy sample in the near-infrared. Simulation models are also carried out, and the central bar components in the simulation snap-shots are compared with those in the observations. In this poster we review the different aspects of barlenses and address their importance in understanding bulge formation in galaxies.