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Warping Away Gravitational Instabilities In Protoplanetary Discs

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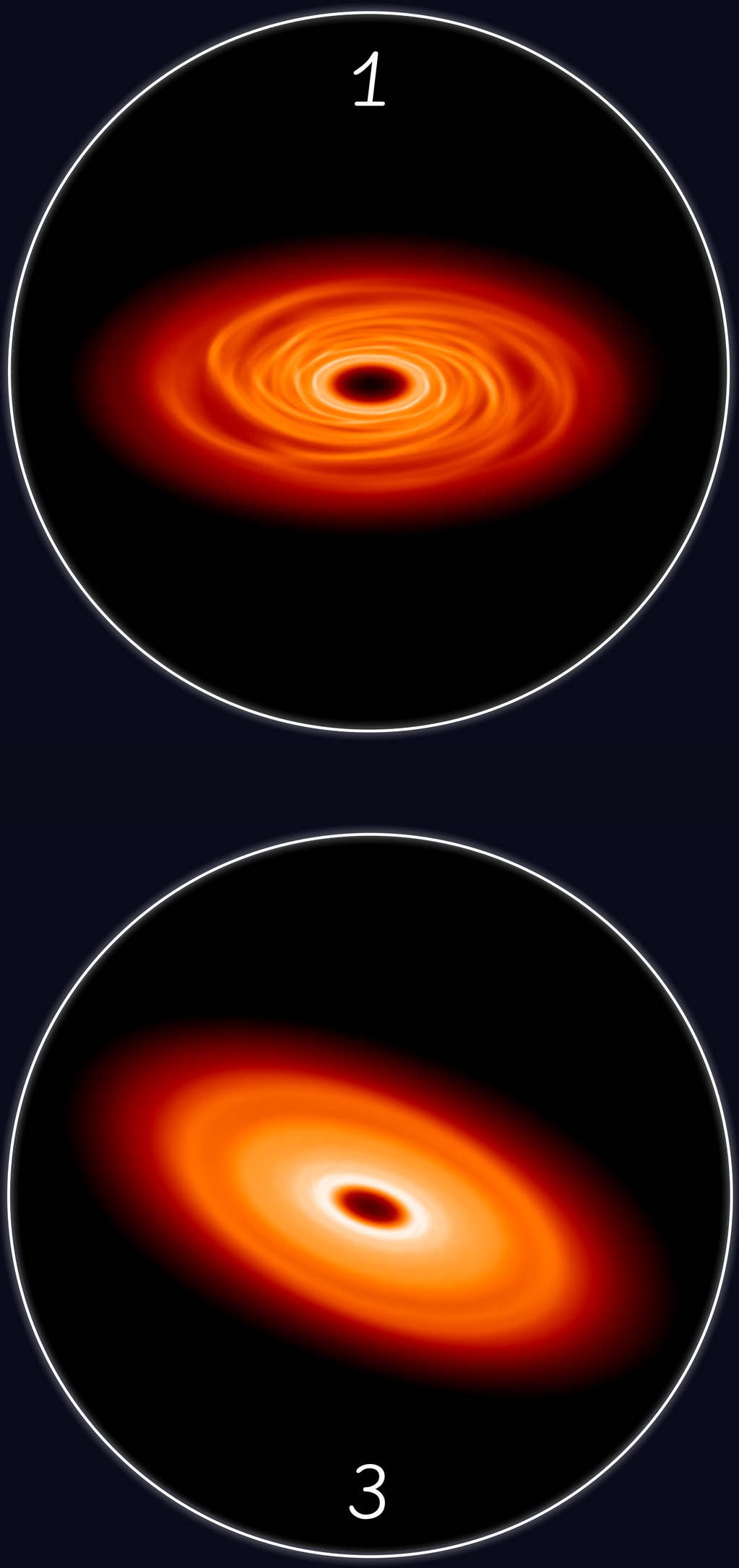
Aim – *Can warps suppress gravitational instabilities in massive discs so that they are more in line with observations?*

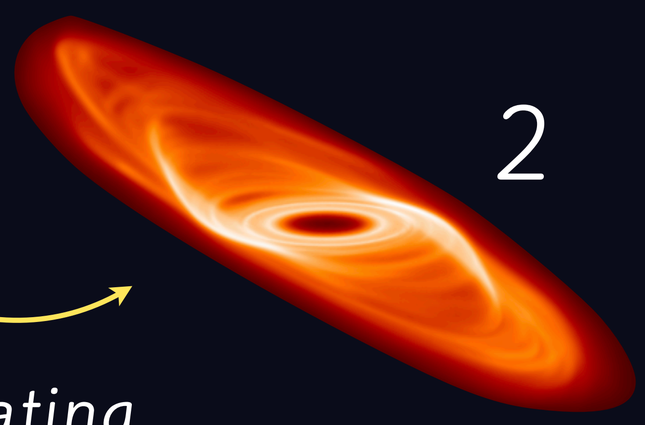
Scan or click here for more details with animations!



Evolution of a Flat Disc

- *The disc remains gravitationally unstable.*
- *Large scale spiral structures are present throughout the disc.*
- *This type of substructure is rarely seen in observations.*

Evolution of a Warped Disc



- *The additional heating induced by the warp results in a gravitationally stable disc.*
- *Results in an axisymmetric disc with ring & gap structure.*
- *This type of substructure is more commonly seen in observations.*

Conclusion – *Spiral structures due to gravitational instabilities are suppressed by the warp yielding an axisymmetric disc (Rowther, Nealon & Meru, submitted)*