

Low-Tech Prototype for a LSST Dark Matter Graphic

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Overview/Brainstorm

- We would like a “infographic” that would allow people to perceive the connection between dark matter “**probe**”, astrophysical “**measurement**”, and astrophysical “**target**”.
- The dark matter parameter space is large and complex, so we may not be able to represent this phase space with a simple matrix (as was originally perceived).
- We would eventually like to be able to tie the “**probe**” to an underlying physical “**model**” of dark matter, but we leave this off the current.
- In this document we focus on the **structure and layout** of the infographic and are **intentionally incomplete** on the content

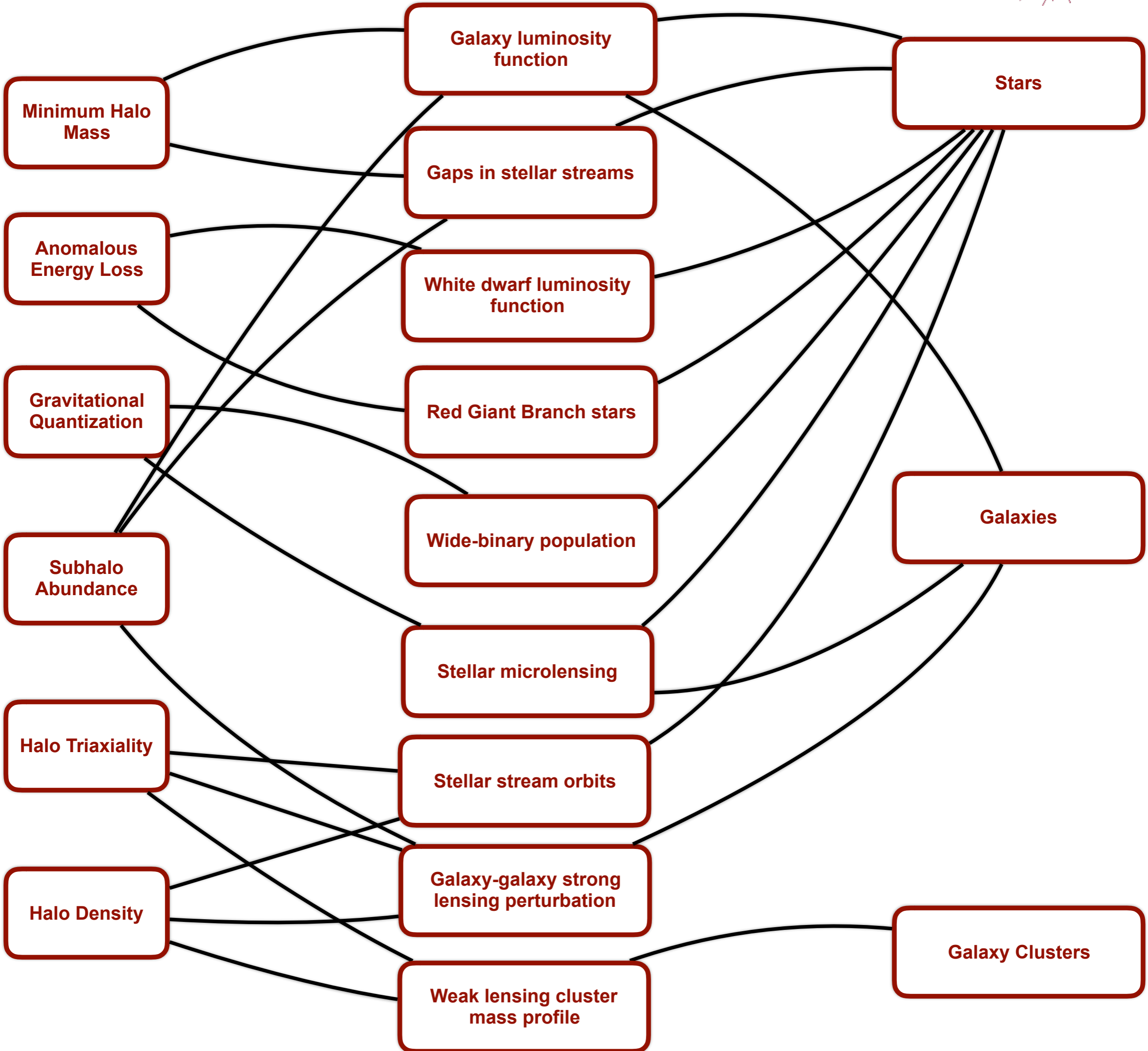
Landing Page

This is the page that the user would land on. All elements are “live”.

Probe

Measurement

Target



Specific “Channel”

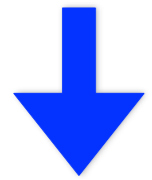
- By clicking (or hovering?) over a specific element, the user can highlight one interconnected network, while the rest of the diagram would be grayed out.
- Users can click on elements in the “**probe**”, “**measurement**” or “**target**” column.

 **User Click**

Probe

Measurement

Target



Minimum Halo Mass

Galaxy luminosity function

Stars

Gaps in stellar streams

Anomalous Energy Loss

White dwarf luminosity function

Gravitational Quantization

Red Giant Branch stars

Subhalo Abundance

Wide-binary population

Galaxies

Halo Triaxiality

Stellar microlensing

Halo Density

Stellar stream orbits

Galaxy-galaxy strong lensing perturbation

Weak lensing cluster mass profile

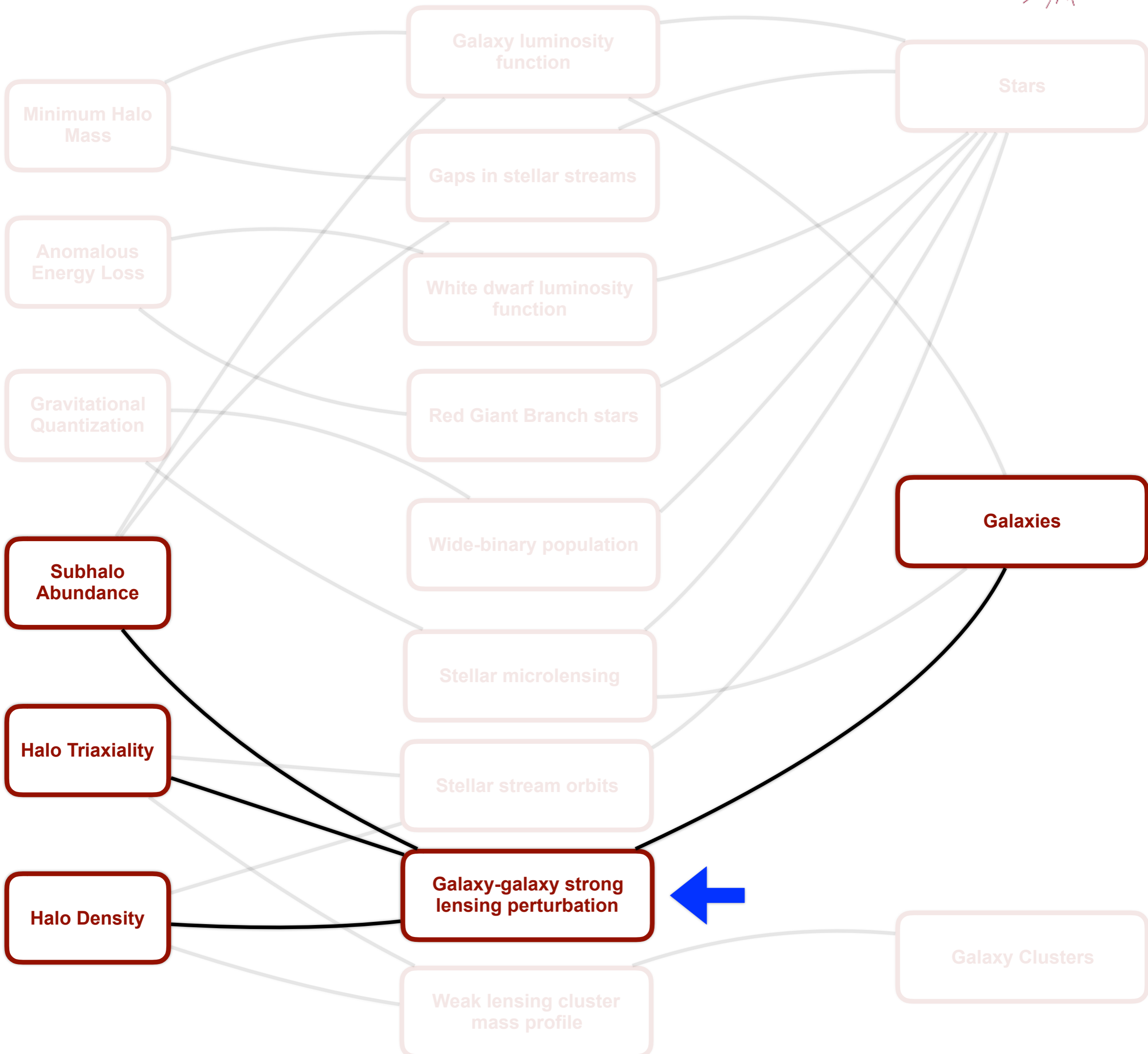
Galaxy Clusters



Probe

Measurement

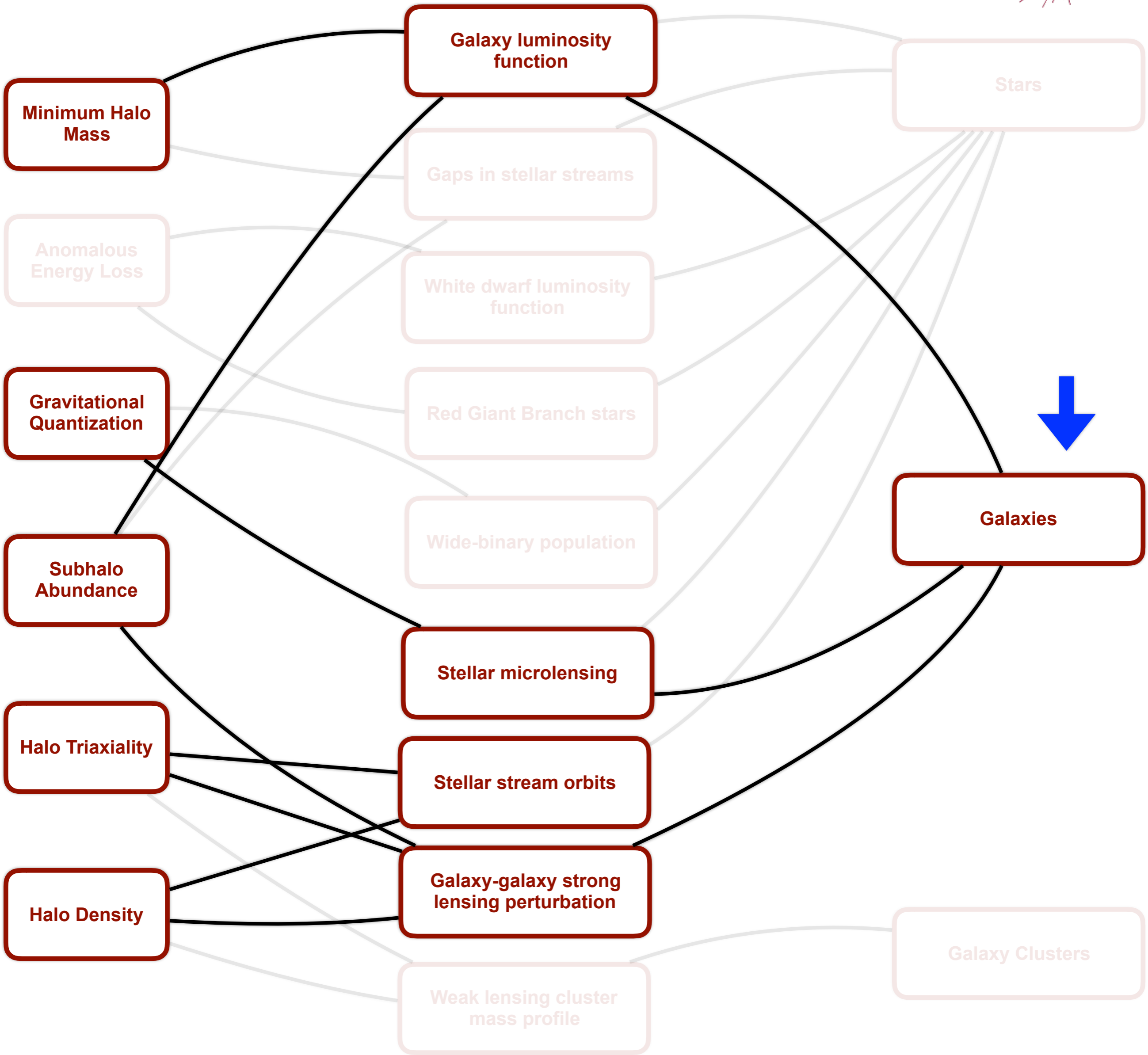
Target



Probe

Measurement

Target



Looking Ahead

- It seems like this graphical structure would be completely feasible within the context of a javascript application:
<https://github.com/d3/d3/wiki/Gallery>
- There is another axis of dark matter physical “**model**”. This could be included as another layer (probably to the left of the existing diagram).
- Another axis that we have available is the color of each element, which could be used to correspond to specific particle physics models?
- In addition, we can have more details (i.e. references, a short description, etc.) that is associated with each element. This text could pop up along side the diagram when a box is clicked on.
- None of the content in the previous diagrams has been finalized. Lots of work to be done.