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Searching For Dark sub-structure with Gaia

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One of the key predictions of Cold Dark Matter (CDM) is the existence of sub-halos at all scales. In order to explain the missing satellite problem many of these sub-halos (in our own galaxy) must be dark- have no or very small stellar component. We have preformed an N-body simulation of the halo and disk of the Milk Way (MW) to study the effect of sub-halos passing through the disk of the galaxy.

As a sub-halo passes through the disk of the MW, the sub-halo can leave a wake in the disk potentially detectable with Gaia.

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