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Implications of Gaia for direct dark matter detection

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The recent releases of data from the Gaia satellite are transformational for galactic astronomy. The unprecetented accuracy with which stellar positions and velocities can be determined with Gaia means we are getting a fresh understanding of the structure, composition and history of the Milky Way's halo. The new data shows that the Milky Way underwent several major merger events which shaped the kinematic structure of the halo in surprising ways. These events will have important consequences for experiments searching for dark matter on Earth. In some cases, like direct searches for WIMPs, Gaia allows us to update the standard halo assumptions used in modelling expected signals. In other cases, notably axion haloscopes, the relics of our Milky Way's past may be much more readily observable.

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