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Galaxy cluster masses with magnification and the effects of intra-cluster dust.

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Weak lensing magnification is an important tool in revealing the masses of galaxy clusters. Galaxies behind a cluster are magnified by the presence of the massive gravitational lens and their apparent position on the sky is deflected away from the lens centre. From such effects we can infer the mass of the lens, however such analysis may also be sensitive to the presence of intra-cluster dust, which will act to reduce the magnitude of the background galaxies. Fortunately we can differentiate between these two different phenomena via the chromatic effects of dust extinction and the different redshift dependence of lensing. For future Rubin magnification measurements it is crucial that the effects of intra-cluster dust are understood in order to fully exploit the weak lensing magnification information. Furthermore such measurements may provide interesting results on the composition of the intra-cluster medium and the cosmic dust density. We investigate the impact of dust using HSC weak lensing data and the Redmapper SDSS galaxy cluster catalogue.

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