

Using the spent beam at the ILC in order to understand strong field physics at the Interaction Point (IP)

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Strong IP electromagnetic fields, being responsible for depolarisation and coherent processes among other things, will play an important role in precision physics at future linear colliders. It is possible that additional strong field effects which are still in the process of being understood may manifest themselves at the ILC and CLIC. In order to understand these effects we propose using a Compton IP in the extraction line of the ILC to take advantage of the energetic fermions downstream of the primary collider IP. A focused, ultra-intense tabletop LASER brought into contact with the spent electron or positron beam at a low angle will provide a boosted system in which strong fields can exceed by up to two orders of magnitude, those previously created in the laboratory. Such strong fields interacting with the polarised spent beam mean that depolarisation, field induced mass shifts and multiphoton processes as well as several new strong field effects can be tested. These strong field tests can provide vital information in order to understand strong field effects at the primary collider IP.

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