

## Hall magnetic field structure and plasma dynamics in large-scale magnetic reconnection

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We investigate Hall magnetic field structure and plasma dynamics in large-scale magnetic reconnection. The Hall field is induced by the electrical currents generated by the difference between ion and electron dynamic motions in and around the magnetic diffusion region. The Hall field structure extends away from the diffusion region and stands in the ion reconnection jets and at their boundary layers. Its extending edge propagates as an Alfvén wave farther away in the pre-existing plasma sheet boundary layer with the accelerated ions. We discuss the cause-and-effect relationship existing between the Hall magnetic field structures and the plasma dynamics in various conditions of magnetic reconnection.