

## 非定常衝撃波における反射電子バースト

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### Burst of reflected electrons in nonstationary shocks

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One-dimensional full particle-in-cell simulations are performed to investigate energetic electron bursts produced at a non-stationary quasi-perpendicular shock. Some of the incoming electrons are intermittently energized and reflected by interacting with nonstationary electromagnetic fields in the shock front. The reflected electrons form an upstream non-thermal population. Oblique whistler waves in the shock transition region influence the distribution function of the reflected electrons. Some electrons are trapped by the waves while staying in the transition region and energized through the shock drift acceleration mechanism. They are suddenly released toward upstream when the magnetic overshoot begins to collapse in a reformation cycle resulting in the clumps of the reflected electrons in a phase space. It is also discussed how upstream physical quantities associated with the reflected electrons can give information about the shock front nonstationarity as well as about local small scale wave activities in the transition region.