Chapter 5
Conclusion

For PLIM we find that a step function conserves its shape when it is moving. The PLIM solution agrees well with analytic one. However, we find that the shape of a peak function deteriorates gradually while it is moving. In addition, the solution near the peak computed by PLIM does not agree with those computed by analytic method. These shows that PLIM can not be applied to peak function while it works very well with step function. Due to the result of testing PLIM with the peak function, we cannot use it to investigate the transport of cosmic rays across the solar-flare shock.

Before the conclusion about the transport of cosmic rays across the shock is drawn we remark that in this work we treat both downstream and upstream regions as having different constant magnitude of magnetic field. Under this restriction simulation is easier to be done. From the numerical results we found density of cosmic ray particle change when crossing the solar-flare shock due to both propagation and acceleration influences. The propagation influence is reflection of particles at the shock front from upstream region back to upstream region. This made a sharp density at the region near the shock front at positive μ. The other influence is acceleration, which transports low-energy particles, of which there are more than high-energy particles, to higher energy. This mechanism takes place while the particles are crossing the shock. After crossing the shock, the particles move away from that shock. Due to this cause negative anisotropy in downstream region and positive anisotropy in upstream region will be found. Finally, numerical result also agreed qualitatively with the observation from ISEE-3.