Conclusions

1. Test cases show performance results, which are typical for CFD applications on massively parallel MIMD computers.
2. Parallelization of Lagrangian multiphase flow calculations is possible and usefull on a moderate number (1–32) of high–performance processors.
3. Domain decomposition approach (2nd method) is applicable to Lagrangian multiphase flow calculations only in the case of uniform particle concentration distribution in the flow domain.
4. The 3rd method is the most advantageous parallelization method for Lagrangian calculations of disperse multiphase flows on MIMD parallel computers due to its universal applicability to any type of particle/droplet flow and due to its good performance, which is comparable with the quasi–linear approach (1st method).
5. Comparable performance behaviour of the 3rd method is expected even for 3–dimensional flow calculations.
6. Performance of parallel Lagrangian calculations of disperse multiphase flows can be further improved using the "mixed approach".