Lecture 3: MPI Basics

Communicators & point-to-point communications (2)

- What means "non-overtaking"?
  Under which conditions does MPI guarantee determinism? (5 min)

  Discuss:

```
if (rank==0) {
  MPI_Bsend(buf1, count, MPI_FLOAT, 1, tag, comm);
  MPI_Bsend(buf2, count, MPI_FLOAT, 1, tag, comm);
} else {
  if (rank==1) {
  MPI_Recv(buf1, count, MPI_FLOAT, 0, MPI_ANY_TAG, comm, status);
  MPI_Recv(buf2, count, MPI_FLOAT, 0, tag, comm, status);
  }
}
```

- Discuss sample code MPI/MPI_SR_1.c!
  Is it safe? How can it be made safe?

- Compare with MPI/MPI_SR_2.c!
  Would using MPI_Rsend here improve things? (4 min)

- Discuss sample code MPI/MPI_SR_3.c!
  Which version is safe? (3 min)

- Discuss sample code MPI/MPI_SR_4.c!
  Would it deadlock?
  If not, describe the course of events! (4 min)

- Discuss sample code MPI/MPI_SR_5.c!
  Is it safe?
  Is it more efficient than the preceding (linear chain)?
  Can it be simplified? (4 min)

- What happens in general when replacing standard send by synchronous send, i.e.
  MPI_Send(<pars>); –> MPI_Ssend(<pars>); ? (4 min)