

Important MPI Functions

Wichtige MPI-Funktionen

```
// Initialize MPI
int MPI_Init(int *argc, char ***argv);

// Finalize MPI
int MPI_Finalize();

// Get size of communicator
int MPI_Comm_size(MPI_Comm comm, int *size);

// Get own rank in communicator
int MPI_Comm_rank(MPI_Comm comm, int *rank);

// Send a message
int MPI_Send(void *buf, int count, MPI_Datatype dtype,
            int dest, int tag, MPI_Comm comm);

// Receive a message
int MPI_Recv(void *buf, int count, MPI_Datatype dtype,
             int source, int tag, MPI_Comm comm, MPI_Status *status);

// Copy a communicator
int MPI_Comm_dup(MPI_Comm comm, MPI_Comm *newcomm);

// Split a communicator
int MPI_Comm_split(MPI_Comm comm, int color, int key, MPI_Comm *newcomm);

// Barrier synchronisation
int MPI_Barrier(MPI_Comm comm);

// Broadcast
int MPI_Bcast(void *buf, int count, MPI_Datatype dtype, int root, MPI_Comm comm);

// Scatter
int MPI_Scatter(void *sendbuf, int sendcount, MPI_Datatype sendtype,
                void *recvbuf, int recvcount, MPI_Datatype recvtype,
                int root, MPI_Comm comm);

// Gather
int MPI_Gather(void *sendbuf, int sendcount, MPI_Datatype sendtype,
               void *recvbuf, int recvcount, MPI_Datatype recvtype,
               int root, MPI_Comm comm);

// Reduction
int MPI_Reduce(void *sendbuf, void *recvbuf, int count, MPI_Datatype dtype,
               MPI_Op op, int root, MPI_Comm comm);
```