Figure 6.9: Flowchart shows the C code for every BG/L node. All work in boxes bounded by black solid lines is executed by all the processors, whereas work in blue box (dashed line) is to be carried out by the master node exclusively. The boxes in green are functions that are further highlighted in red boxes bounded by dashed lines. The grey circle specifies the time synchronizations of the nodes existing in the global instance of the communicator "MPI_COMM_WORLD". After receiving the subdomain information, each node creates its own sets of unitary structures encoding either an EC or SMC. Each node than initiates a local C++ object instance of RKSUITE to solve its computational subdomain. Upon successful completion of the step, every nodes communicates to all the nodes, the step size for the next step reported by its local RKSUITE instance. The minimum step size of all the nodes is then taken as the new step size by all the nodes.
Start

- Initialize MPI

- Delegates subdomain dimensions

- Send subdomain info to corresponding processors

- Receive subdomain info

- Allocate memory

- Arrange cells in $i \times j$ matrix

- Declare instance of class RKSUITE

- Tags each cell with a boundary tag which encodes the cell's location in the computational grid

- Initialize parameters of 'setup'

- Structure definition contains variables, storage for single cell and coupling fluxes and local $J_{PLC}$ values

- Calculate the number of ECs & SMCs, constituting the computational domain and in user-defined dimensions of the arterial segment

- Check flags for step success

- ComputeDerivatives(t, y, dxdt)

  - Input: t, y
  
  - Return: dxdt

- Evaluate expression of individual currents

- Compute the net intercellular gap junction flux in or out of the cell with respect to each existing homocellular and heterocellular nearest neighbour

- Figure 6.10: Comparing with the flowchart in Figure 6.10, the box encircled in grey is the amendment where $\text{INTERVAL} = 1 \times 10^{-2}$ is a constant increment made to the $T_{\text{end}}$, during which RKSUITE on each node can select the next step size adaptively within this interval.