```
nav2 core::Controller
                  Δ
  _move_base_z::backward
local planner::BackwardLocalPlanner
- nh
- name
- backwardsPlanPath
costmapRos_
- goalMarkerPublisher
-planPub_
- k_rho
k_alphak_betta
 pure_spinning_allowed
 betta_error
linear_mode_rho_error
_threshold
-alpha_offset
betta_
       _offset
- max_linear_x_speed
- max_angular_z_speed
- yaw_goal_tolerance
- xy_goal_tolerance_
- carrot_distance
- carrot_angular_distance

    divergenceDetectionLastCarrot

LinearDistance
- transform tolerance

    waitingTimeout

- waitingStamp_
- goalReached

    initialPureSpinningStage

    straightBackwardsAndPure

SpinningMode
- enable obstacle checking
- inGoalPureSpinningState_
- waiting

    currentCarrotPoseIndex

+ BackwardLocalPlanner()
+ ~BackwardLocalPlanner()
+ configure()
+ activate()
+ deactivate()
+ cleanup()
+ setPlan()
+ computeVelocityCommands()
+ isGoalReached()
+ setSpeedLimit()
- updateParameters()
findInitialCarrotGoal()
updateCarrotGoal()
resamplePrecisePlan()
straightBackwardsAndPure
SpinCmd()
- publishGoalMarker()
- computeCurrentEuclideanAnd
AngularErrorsToCarrotGoal()
- checkGoalReached()
- checkCurrentPoseInGoalRange()
resetDivergenceDetection()
- divergenceDetectionUpdate()
- checkCarrotHalfPlainConstraint()
 generateTrajectory()
computeNewPositions()
```

- tf