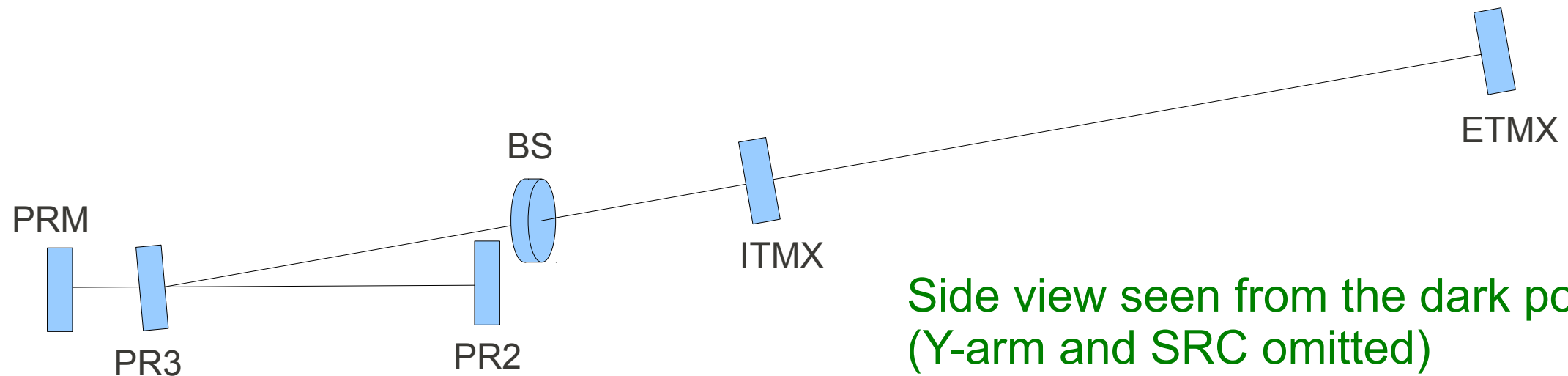
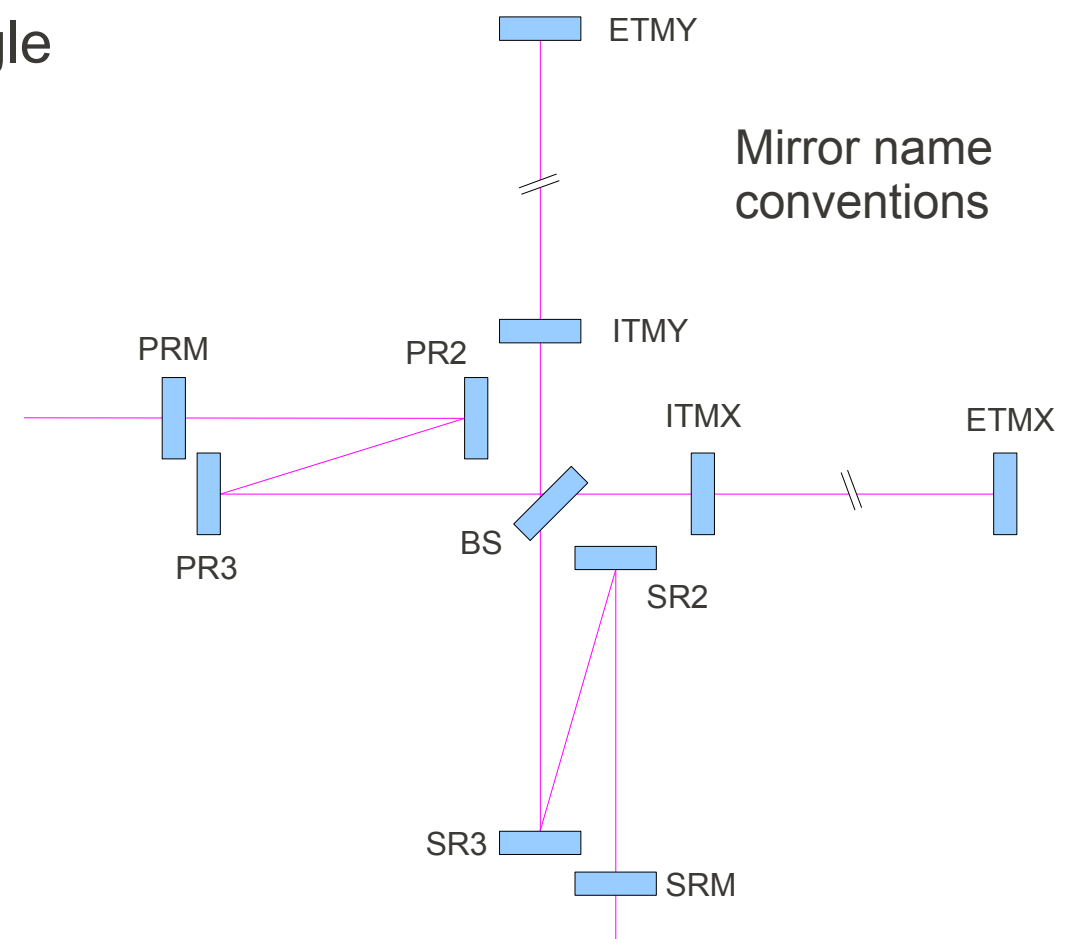


## How to handle the slope of the arm tunnels ?

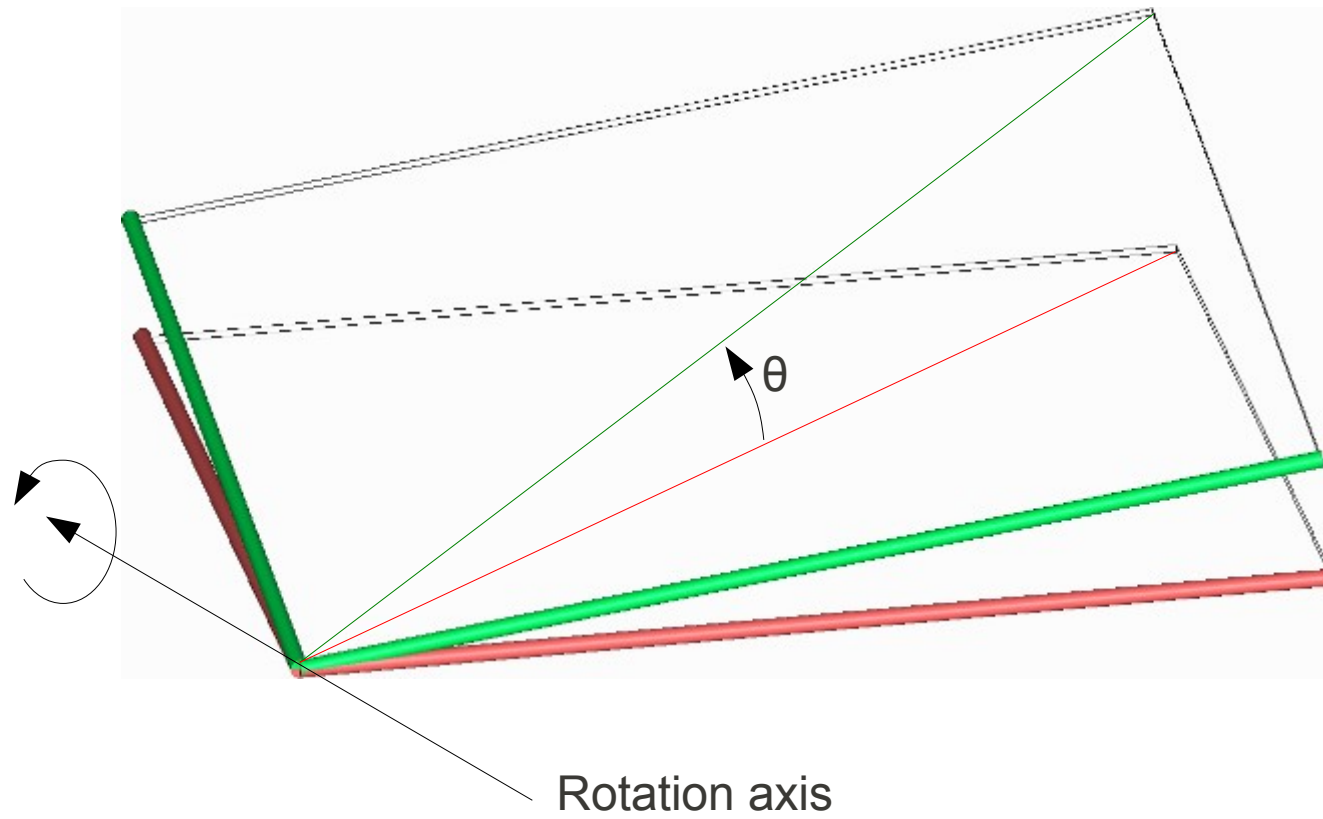


Side view seen from the dark port side  
(Y-arm and SRC omitted)

- Up to the PR2, the beam is on a level plane defined by the local gravity.
- The beam is reflected upward by the PR3.
- The rest of the IFO sits on a plane defined by a triangle formed by the BS, and the two ETMs.
- The dark port beam is leveled by the SR3.
- Following a simple geometric consideration, the BS can be hung just straight.
- PR3, ITMs and ETMs have to be hung tilted.
- At PR3, a slight rotation of the polarization will occur, which might be a problem for BS (?)

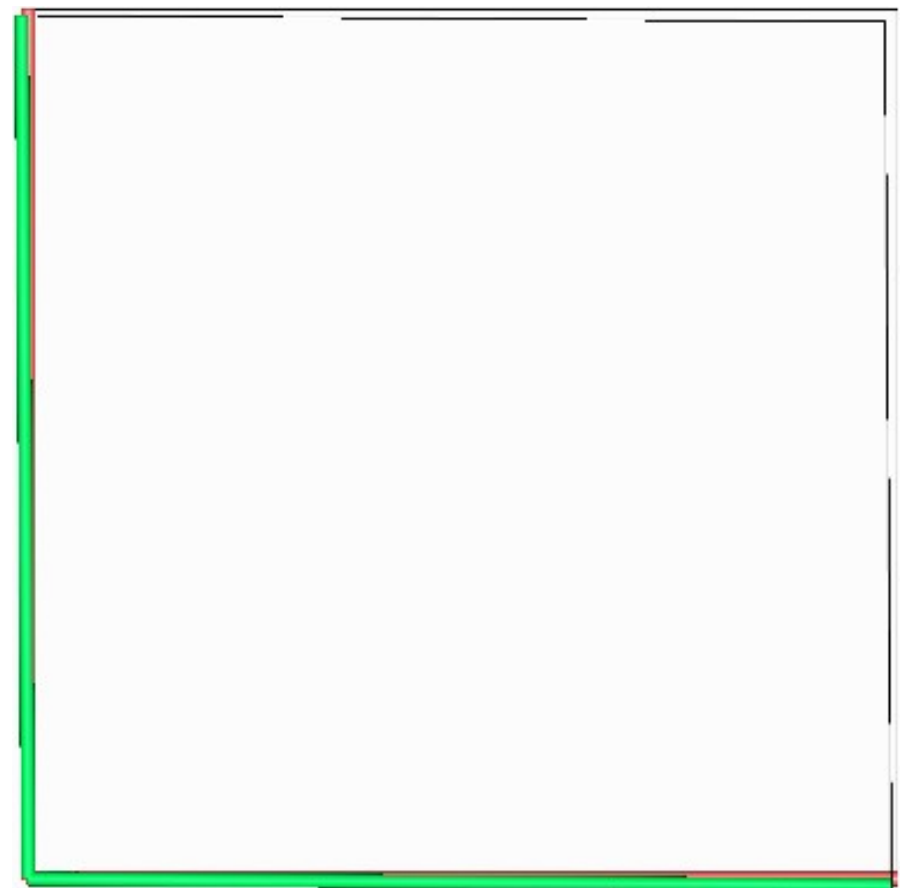


## Slope Type 1



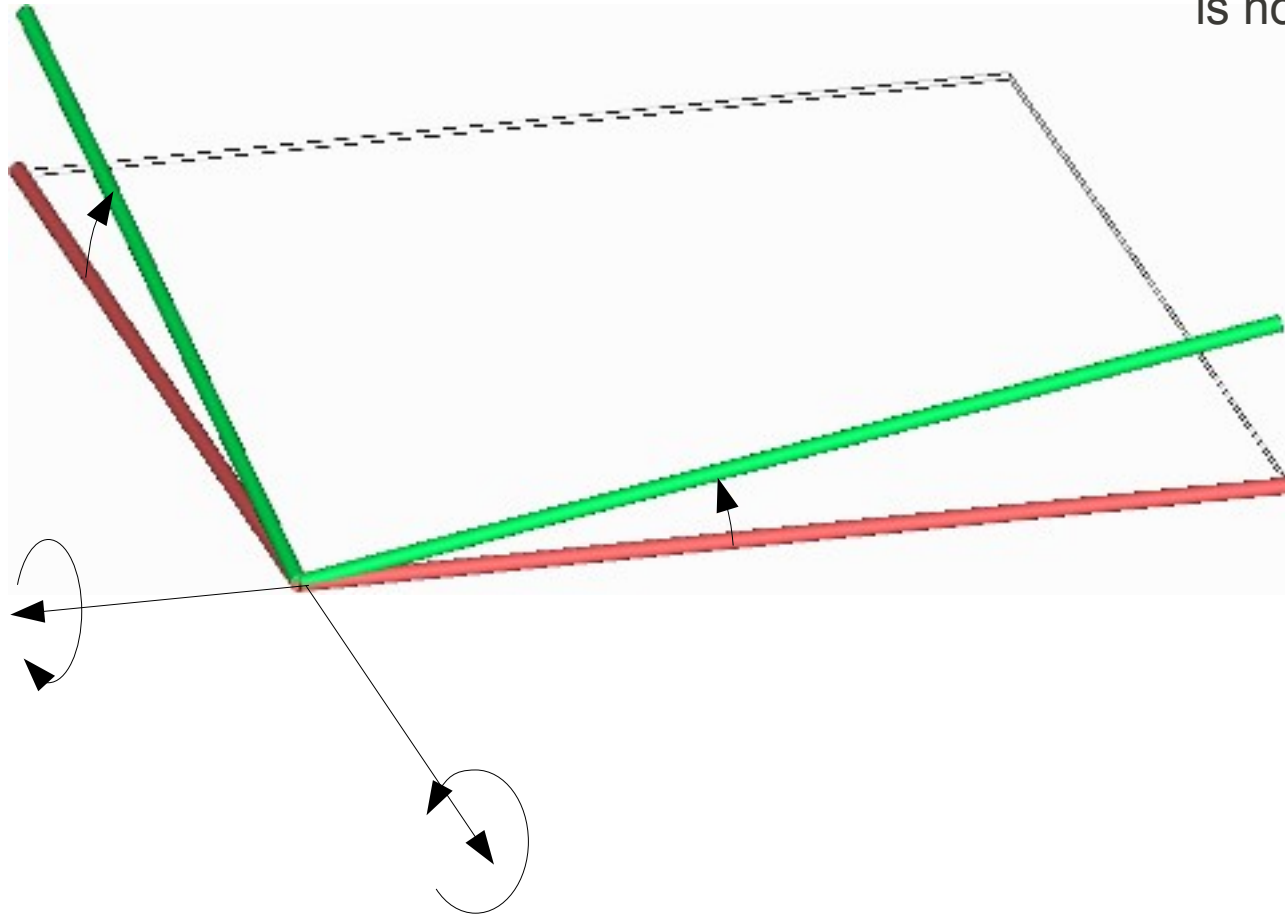
- The original arms are rotated around an axis perpendicular to the bisector of the arms and going through the BS.
- The angle between the two arms is preserved, i.e. 90 deg.

Top View



## Slope Type 2

- Each arm is rotated using the other arm as the rotation axis.
- After the rotation, the angle between the two arms is no longer 90 deg.



Top View

