### 4.1.4 Phase diagram: Oblate

If the deformation to the droplet is done by pressing down on two extremes of the droplet, we obtain the oblate geometry ($\varphi > 1$). For strong anchoring the phase diagram is built for $0.5 < \varphi < 1$, see figure 4.7A. The only destabilization we observe is the TwBs that morphs into a RSS when $\varphi$ is lowered. The bipolar and TwBS phases show the two surface boojums but these are only aligned with the major axis of the geometry when $\varphi < 0.7$. When the sphericity is not stronly altered, the boojums are displaced from the $z$-axis towards the region with higher curvature and are not diametrically opposed. This shows a preference twoards the formation of the RSS structure as shown in figure 4.7 (c). BPs are stable in the same temperature and chirality intervals as in the droplet.

For moderate and weak anchoring conditions, figure 4.7B, the $\tau$-Ch phase is stabilized as the precursor of the BPI and the BPII is no longer observable for small values of $\varphi$. The regions where BPs were present now show defect structures in the bulk without an identifiable symmetry, that we now call derived BP (dBP). The disclination lines cross the bulk and touch the surface forming hexagonal patterns of $\lambda$ disclinations similar to structures formed in nanochannels.

As we move throughout the phase diagrams, we found three particular phenomena that should be highlighted: the specifics of the twist cylinder structure, the orientability of cholesteric phases, and the morphing of BP structures as $\varphi$ is modified.

### 4.1.5 Additional details on chiral tactoids

The twist cylinder (TC) structure is stable in all geometries with moderate and weak anchoring conditions, and for larger pitch values. This phase, as stated before, is a degeneration of the TwBs since now the director field is virtually unbounded. An evidence of this is the twisting of the director field in the bulk, in both phases (TwBs and TC) the director follows a helical trajectory. The difference between both structures lies in the presence of the boojums. The TC is better described as concentric cylindric shells where each shell is characterized by an unique orientation of the director with respect to the major axis of the geometry. This illustration is shown in figure 4.8