

$$\begin{array}{ccccc}
X' & \xrightarrow{i_X} & X & \xrightarrow{p_X} & X' \\
\downarrow a' \text{ Cofib} & & \downarrow a_{tc} \text{ TCofib} & & \downarrow a' \text{ TCofib} \\
& & E & \xrightarrow{k} & P \\
& \nearrow s & \downarrow a_{tf} \text{ TFib} & & \searrow l \\
Y' & \xrightarrow{i_Y} & Y & \xrightarrow{p_Y} & Y'
\end{array}$$

A commutative diagram illustrating a relationship between various objects and maps. The diagram is organized into two main rows of objects, with intermediate objects E and P in the center.

- Top Row:** $X' \xrightarrow{i_X} X \xrightarrow{p_X} X'$
- Bottom Row:** $Y' \xrightarrow{i_Y} Y \xrightarrow{p_Y} Y'$
- Central Objects:** E and P
- Maps:**
 - a' (vertical solid arrows from X' to Y' and from X' to Y')
 - a_{tc} (vertical solid arrow from X to E)
 - a_{tf} (vertical solid arrow from E to Y)
 - k (horizontal dashed arrow from E to P)
 - l (diagonal dashed arrow from P to Y')
 - s (curved dashed arrow from Y' to E)
 - i_X, i_Y, p_X, p_Y (horizontal solid arrows)
 - Cofib (label for the a' map from X' to Y')
 - TCofib (label for the a_{tc} and a' maps)
 - TFib (label for the a_{tf} map)
- Other Features:** A dashed arrow points from X' to P , and a square symbol \square is located near the top right.