

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

A commutative diagram illustrating a relationship between various objects and maps. The diagram is organized into two main rows of objects, with intermediate objects and maps connecting them.

- Top Row:** Objects X' , X , and X' are connected by solid arrows i_X and p_X .
- Bottom Row:** Objects Y' , Y , and Y' are connected by solid arrows i_Y and p_Y .
- Left Vertical Map:** A solid arrow a' points from the top-left X' to the bottom-left Y' , labeled "Cofib".
- Right Vertical Map:** A solid arrow a' points from the top-right X' to the bottom-right Y' , labeled "TCofib".
- Central Objects and Maps:**
 - Object E is located between the top and bottom rows.
 - Object P is located to the right of E .
 - A solid arrow c points from X to E , labeled "TCofib".
 - A solid arrow f points from E to Y , labeled "TFib".
 - A dashed arrow s points from Y' to E .
 - A dashed arrow k points from E to P .
 - A dashed arrow l points from P to the bottom-right Y' .
- Commutativity:** A square symbol \square is placed in the upper right area, indicating that the diagram commutes.