

## § Koszul connection



Jean-Louis Koszul 1921~2018

A way to “connect” or identify fibers over nearby points ◦  
Differential a section w.r.t.  $X$

A section  $\sigma: M \rightarrow M \times V$

$$p \rightarrow \{p\} \times V$$

$\nabla_X \sigma$  covariant derivative a section  $\sigma$  along  $X$

1.  $\nabla_X (h\sigma) = h(\nabla_X \sigma) + (Xh)\sigma$
2.  $\nabla_{hX} \sigma = h(\nabla_X \sigma)$
3.  $\nabla_{X+Y} \sigma = \nabla_X \sigma + \nabla_Y \sigma$      $\nabla_X (\sigma_1 + \sigma_2) = \nabla_X \sigma_1 + \nabla_X \sigma_2$