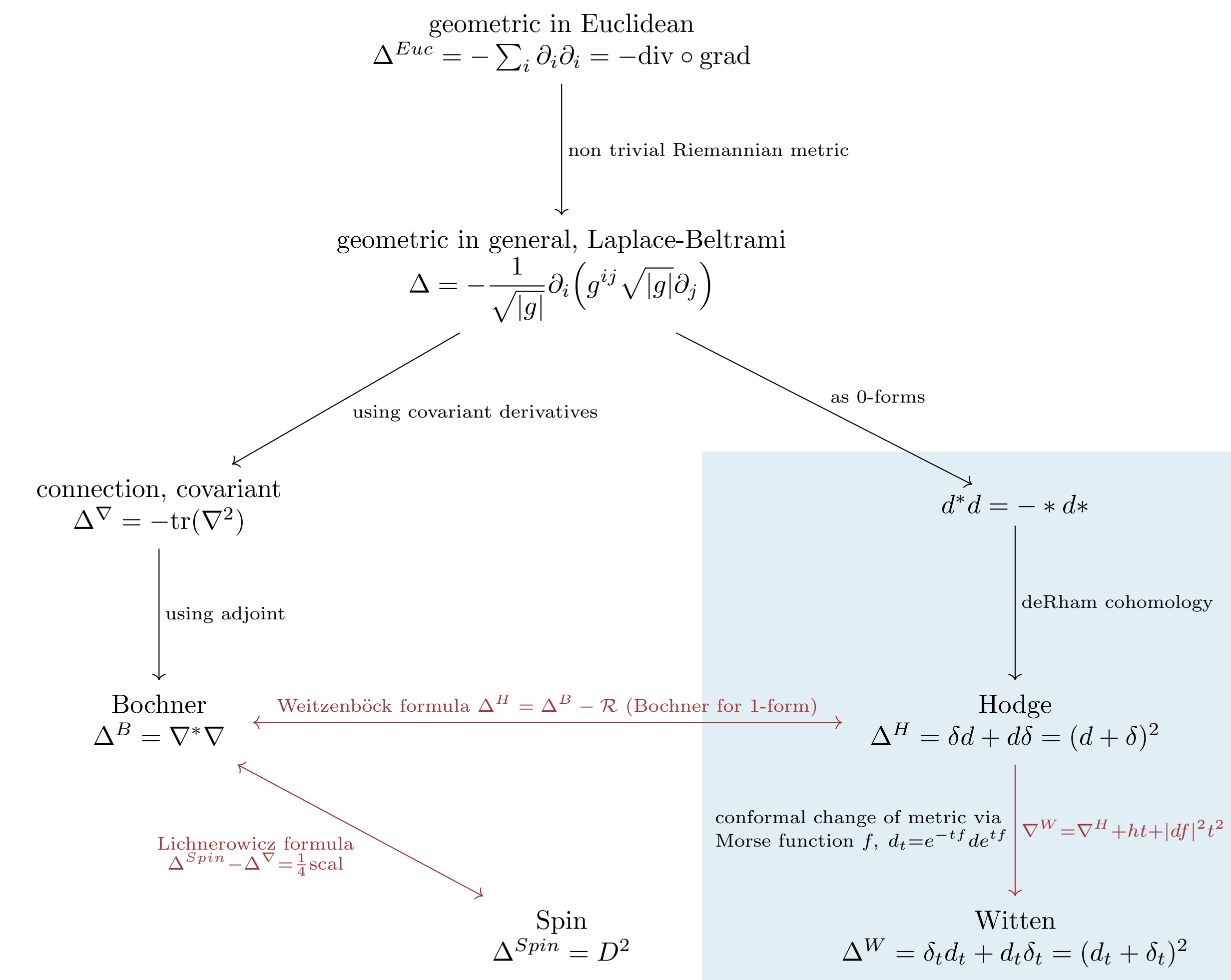

geometric in Euclidean
$\Delta^{Euc} = -\sum_i \partial_i \partial_i = -\mathrm{div} \circ \mathrm{grad}$
non trivial Riemannian metric
geometric in general, Laplace-Beltrami
$\Delta = -\frac{1}{\sqrt{|g|}} \partial_i \left(g^{ij} \sqrt{|g|} \partial_j \right)$
using covariant derivatives
as 0-forms
connection, covariant
$\Delta^{\nabla} = -\mathrm{tr}(\nabla^2)$
$d^* d = - * d *$
using adjoint
deRham cohomology
Bochner
$\Delta^B = \nabla^* \nabla$
Weitzenböck formula $\Delta^H = \Delta^B - \mathcal{R}$ (Bochner for 1-form)
Hodge
$\Delta^H = \delta d + d\delta = (d+\delta)^2$
Lichnerowicz formula
$\Delta^{Spin} - \Delta^{\nabla} = \frac{1}{4}\mathrm{scal}$
conformal change of metric via
Morse function f, $d_t = e^{-tf} d e^{tf}$
$\nabla^W = \nabla^H + ht + |df|^2 t^2$
Spin
$\Delta^{Spin} = D^2$
Witten
$\Delta^W = \delta_t d_t + d_t \delta_t = (d_t + \delta_t)^2$