cross-convolution method of shear wave splitting

① Measure $E = \| R^{obs} * T^{pred} - T^{obs} * R^{pred} \|_2$

alternative to:

$\| R^{obs} - R^{pred} \|_2 + \| T^{obs} - T^{pred} \|_2$

given R^{obs} T^{obs}

predict R^{pred} T^{pred}

basic assumption: $R^{obs} = s * r^{true}$

$T^{obs} = s * t^{true}$

② Anisotropic Process - better than "apparent splitting"

1-layer case τ, θ → stick seismogram

2-layer case $\tau_1, \tau_2, \theta_1, \theta_2$ →

③ Receiver function

same N, ΔT, different A's.

r^{true}, t^{true} } N pulses, N pulses,

④ RHN example of receiver functions.

[read R, Z, T for selected H.Q. events]

⑤ DRLN example of anisotropy

1-layer inversion — different solns. $E_{2\text{-layer}} < E_{1\text{ layer}}$

2-layer " —

[NEED TO IMPROVE DRLN]

⑥ Synthetic example of 2-layer anisotropy (from synthetics)

1-layer inversion - sawtooth, waveform fit bad;

2-layer inversion - dead on, " " good.

7. DRLN How good is the 1-layer anisotr model.

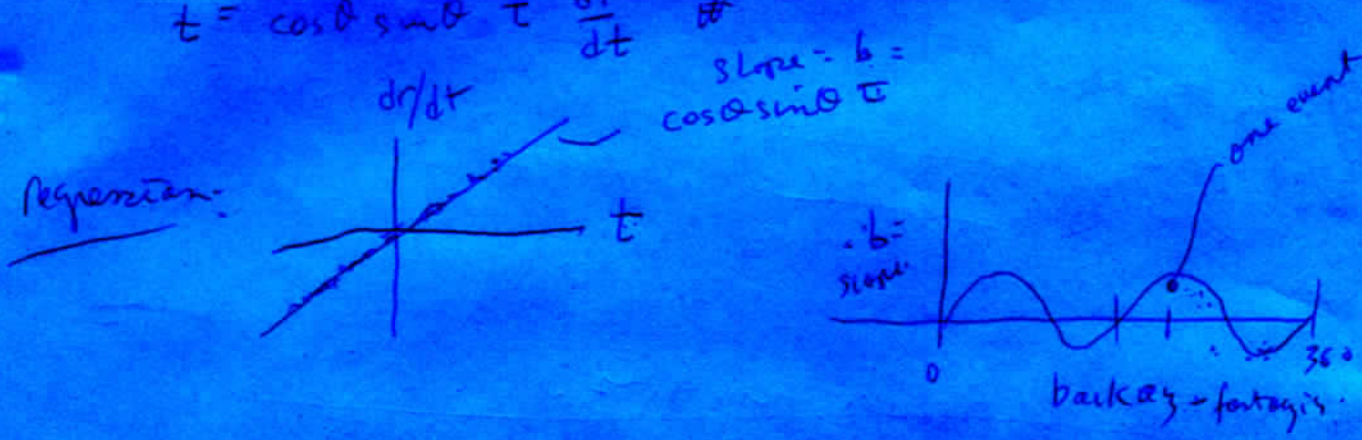
E min ~30% var. reduction

$t_{max} \approx \left(\frac{1}{r_2}\right)^2 \tau \frac{2\pi}{T}$ T = period of wave.

DRLN $T \approx 17$ $t_{max} \approx 0.2$ actual t_{max} larger.
$\tau \approx 1$

8. DRLN How good is the 1-layer correction

$t = \cos\theta \sin\theta \tau \frac{dr}{dt}$ ##



9. Fundamental Eqn. - OK, we observe a transverse signal, so we know V.M. is not isotropic - radially stratified. But - How much of that Transverse signal - if any - has to do with simple anisotropy

10. Corollary is t is "anomalously big" The the tendency is to drive $\tau \uparrow$ $\theta \to 45°$