Preliminary Results – CIRS VE phantom analysis

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Phantoms provided by: Ted Lynch, CIRS

Clinical data – group SWS analysis presented in Palmeri et al, J. Hep, 2011.

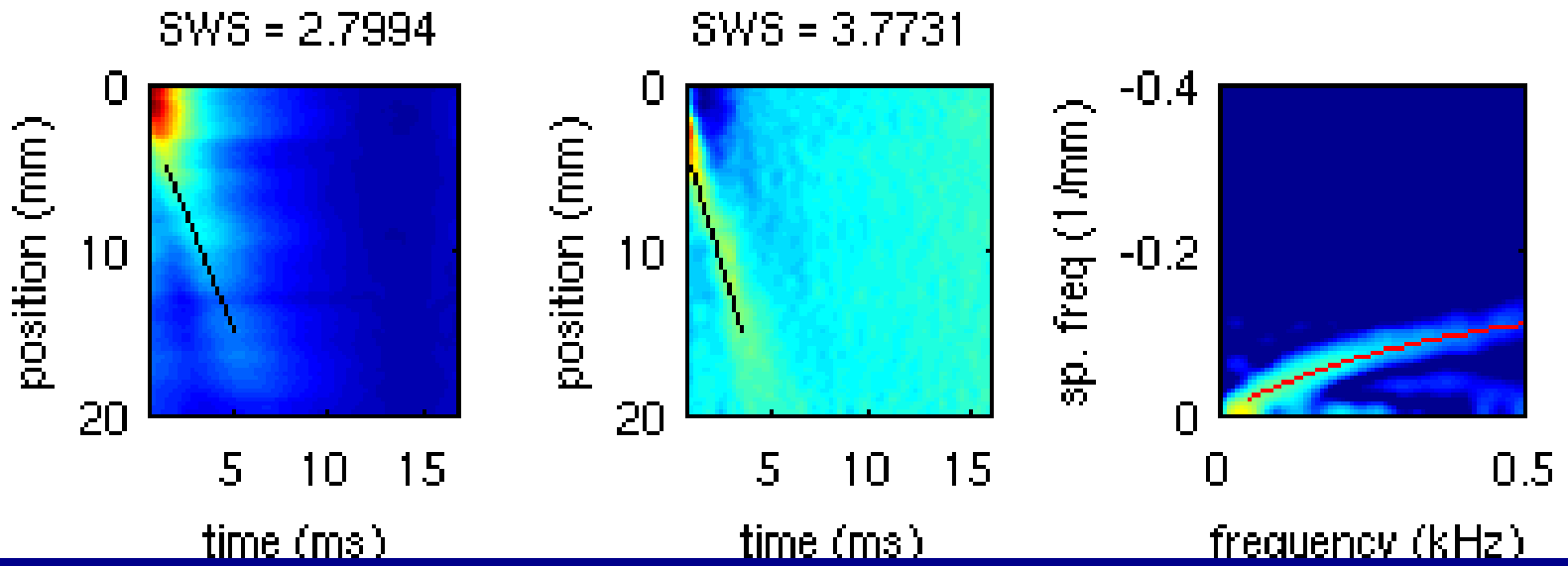
Dispersion analysis of clinical data presented in: Nightingale et. al, IEEE UFFC IUS Proceedings 2013.

F3 Human Liver

group SWS ratio: 1.35 (greater than 1 indicates dispersion)

Displacement Velocity 2D FT

μ = 8.07 kPa, η= 4.42 Pas



Voigt model for c(ω), μ_1 = shear modulus μ_2, η = shear viscosity

$$c(\omega) = \sqrt{\frac{2(\mu_1^2 + \omega^2\mu_2^2)}{\rho\left(\mu_1 + \sqrt{\mu_1^2 + \omega^2\mu_2^2}\right)}}$$

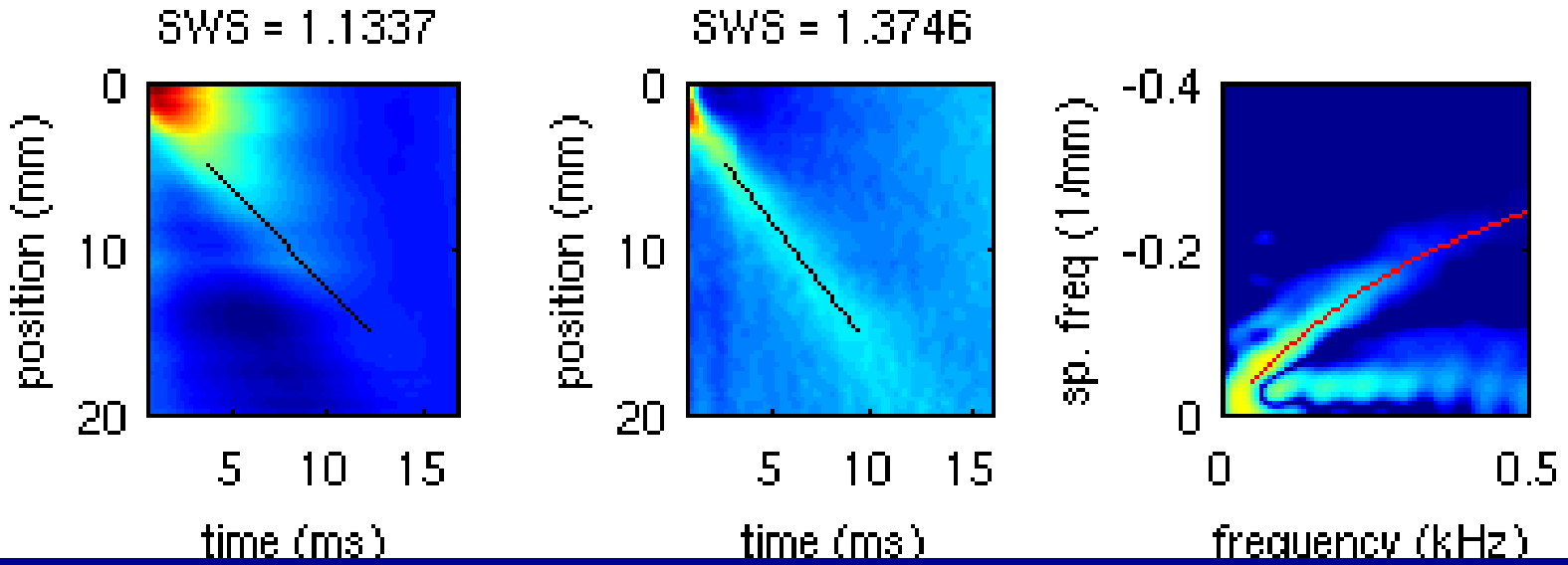
Nightingale et al Proceedings of IEEE UFFC IUS symposium, Prague, 2013.

F1 Human Liver

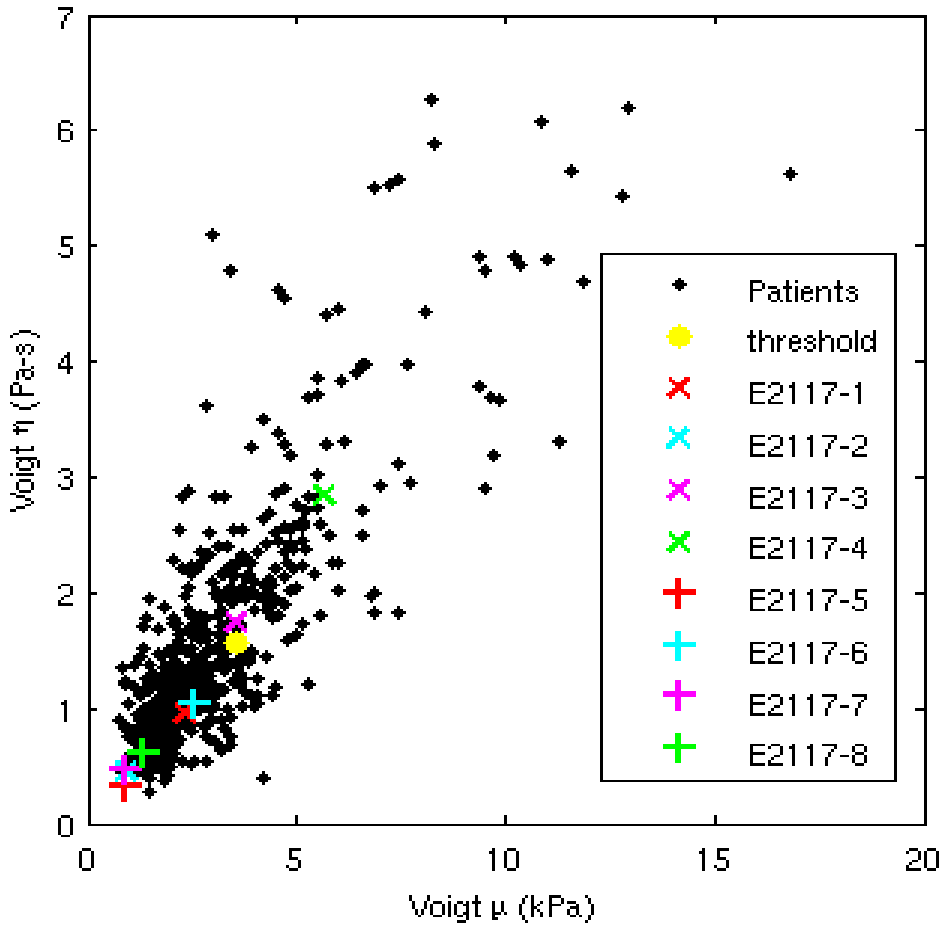
group SWS ratio: 1.21

Displacement Velocity 2D FT

μ = 1.84 kPa, η= 0.88 Pas



Sample VE Phantoms vs. Human Liver



Voigt model dispersion fit to the 2D FT data for:

- our NAFLD patient data (black points)
- Best threshold (yellow point) with the largest AUROC for separating fibrosis stages ≤ F2 from those ≥ F3 in our NAFLD patient population
- CIRS E2117-X phantoms (x's and +'s)

To do: -Ship phantoms to Mayo for their analysis

-Select two or three? recipes to use for phase 2…