

*Department of Geosciences  
at the University of Oslo,  
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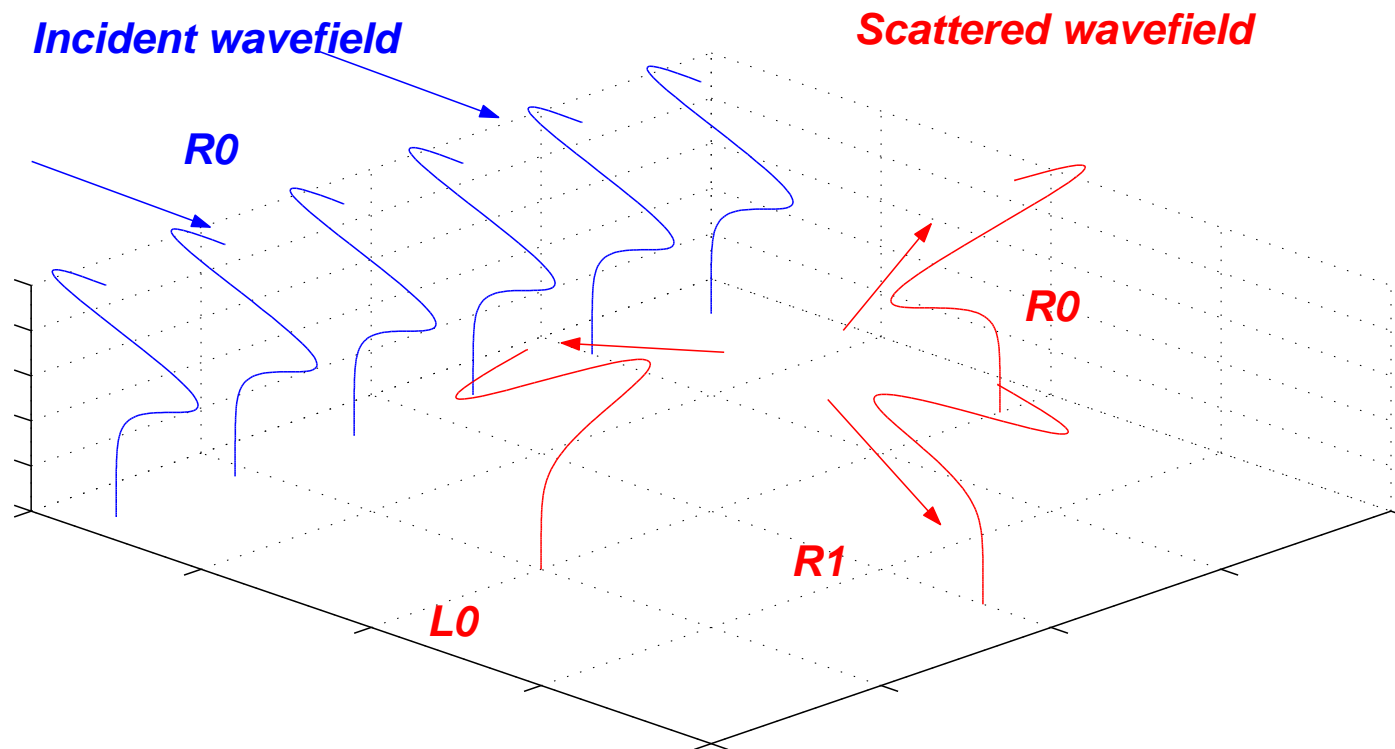
SPICE participant: Prof. Valérie Maupin

## *Our research field:*

- Semi-analytical methods to model waveforms
- Mode coupling in 3-D anisotropic structures, including multiple-scattering effects
- Working at global to geotechnical scale
- Inversion with linear and global search methods

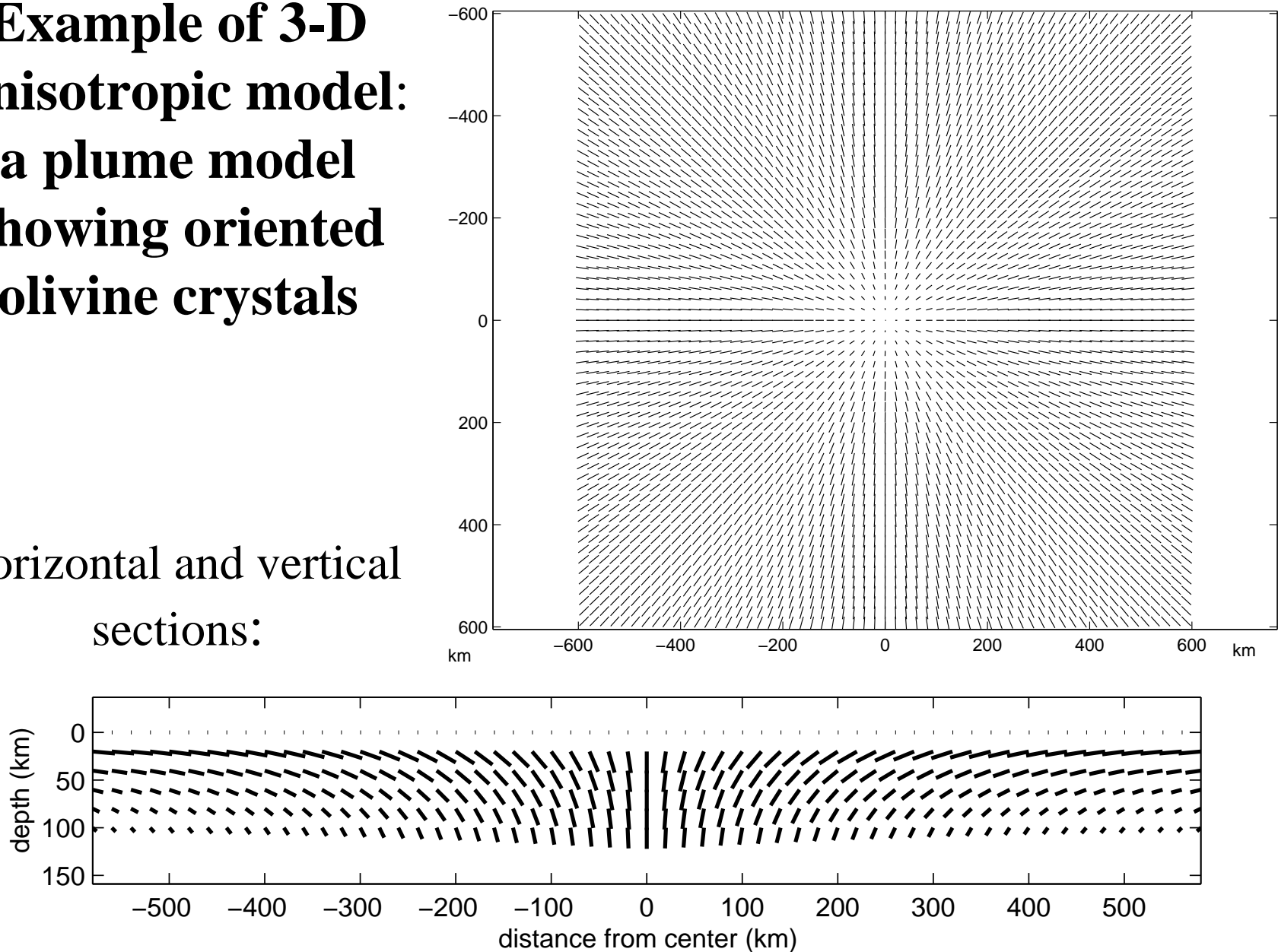
# The multiple-scattering mode coupling scheme:

The incident wavefield ( $R0$  here) is scattered by the heterogeneities in the 3-D structure, resulting in particular in coupling to other modes ( $L0$  and  $R1$  here)

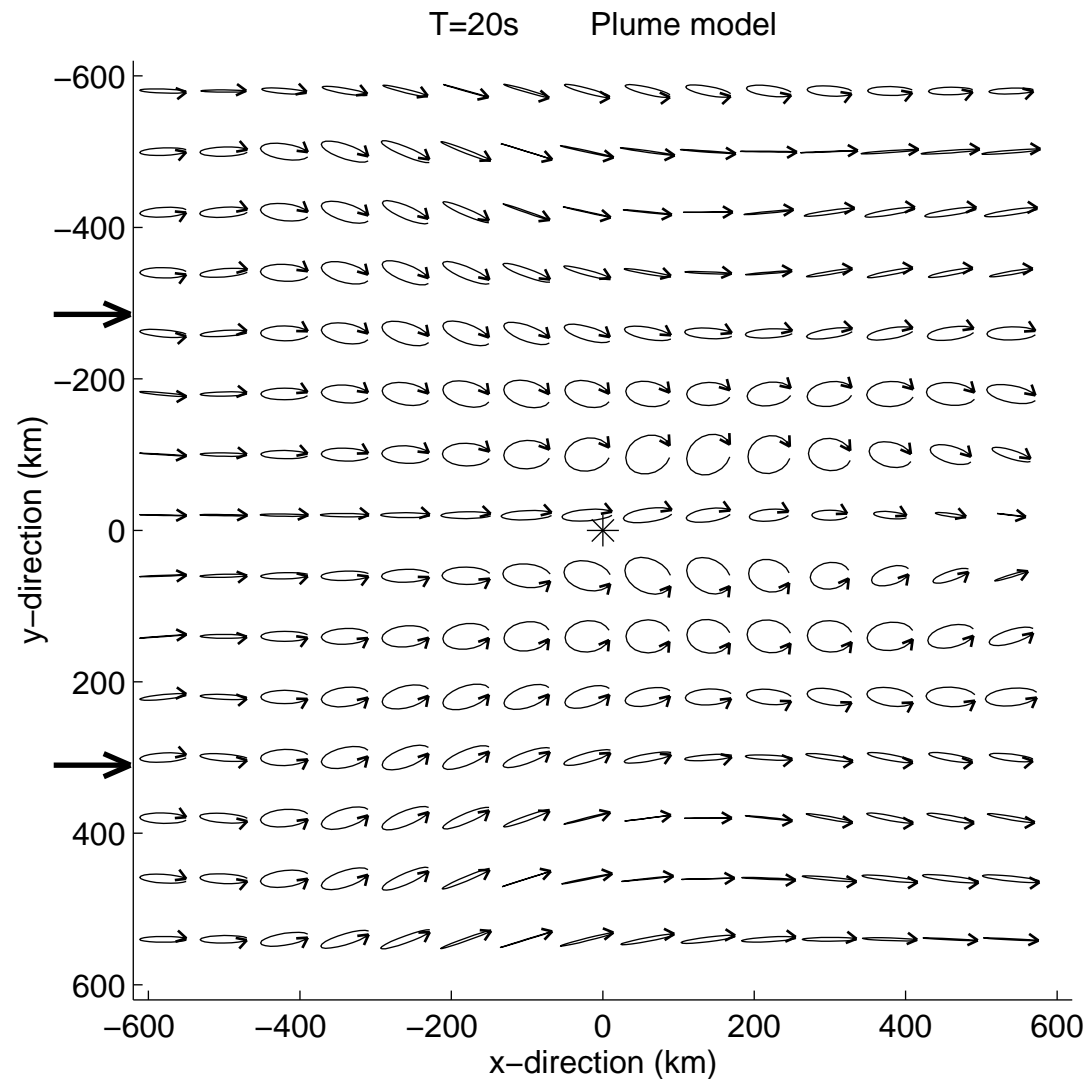


**Example of 3-D  
anisotropic model:  
a plume model  
showing oriented  
olivine crystals**

Horizontal and vertical  
sections:



# The polarization of the Rayleigh wave in the plume model



## *Objectives in SPICE:*

- Improvement of tools for modeling and inversion of whole wavefields of S and surface waves.
- Applications to improve upper mantle models, map the flow with anisotropy, map layering at geotechnical scale.