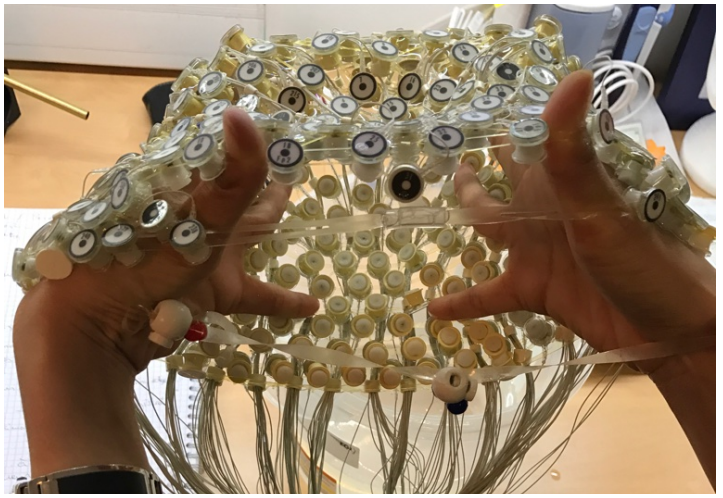
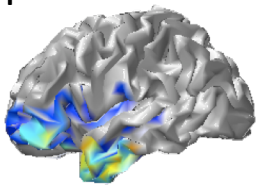
HIGH DENSITY EEG : EGI



- An EEG system: bioelectric activity
- High density electrodes (up to 256)
- Temporal precision 1 ms
- ++ Spatial precision : source localization
  - More sensors and better coverage (face and neck)
  - Precise electrodes localization system (versus standard 10-10 or 10-20)



- In progress (Deirdre Bolger):
  - System update : expert Tanguy Hedrich (McGill)
  - Crash tests in progress
  - Brainstorm training (sources analysis : MNE, MEM, etc.)

Questions/Discussion :

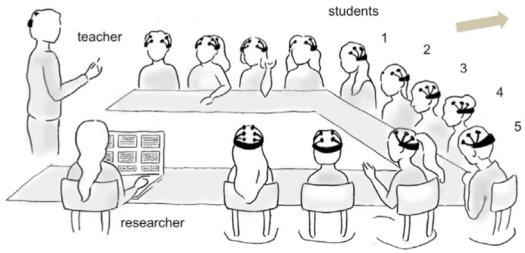
- How to manage artifacts? especially speech artifact

ICA (C. Bénar), BSS-CCA (F.X. Alario, B.Burle), ItCor (A-.S Dubarry)

- Head model and inverse problem

HYPERSCANNING

Principle : Simultaneous recording of brain activation from multiple subjects (Koike et al. 2015)
Recording techniques : EEG (Astolfi et al. 2011) , MEG (Baess et al. 2012),
fMRI (Spiegelhalder et al. 2014), fNIRS, etc.



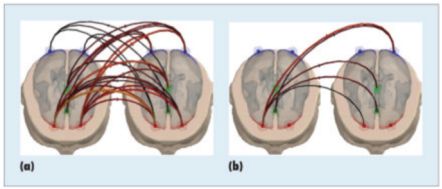
History :

Duane et al. 1965 (EEG), then early 2000
until Dikker et al. *Current Bio* May 2017

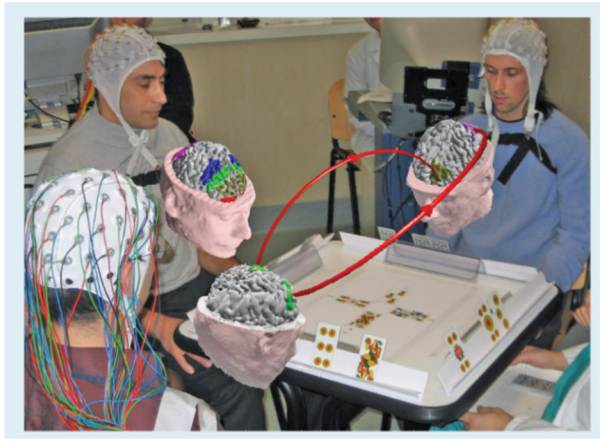
Set up : Synchronize two or more recording systems

Signal processing :

« Inter-brain effect » measurement



- Correlation
- Wavelet phase coherence
- Granger causality (A. Brovelli)
- Graph analysis
- Virtual brains (D. Battaglia, V. Jirsa)
- Italian co-speech gesture (A. Meguerditchian)



Astolfi et al. 2011

THANK YOU FOR YOUR ATTENTION

EEG experimental laboratory at LPL (Aix-en-Provence)

COMING SOON!?