



# INTRODUCTION AT LES HOUCHES

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## PHYSICS

Particle (MSc) → Astroparticle (PhD)

BSM phenomenology, SM+U(1)

RHN DM production (FI and FO)

Leptogenesis → Phase transitions

**Interested in:** theory of early Universe + particle physics

**I like:** (FT)QFT, GR, calculating on paper

## NOT PHYSICS

Books: crime or fantasy (but not on string theory)

I like to (but cannot) play chess

Love mountains (duh...)

## LITTLE BIT MORE ON THE PHYSICS...

### DARK MATTER

**Freeze out** with exploiting resonance  $\rightarrow$  allows for small gauge coupling well below that of EW

**Freeze in** is standard, difficult to rule out

**Additional interest:** supernova constraints

### PHASE TRANSITIONS

**Goal:** estimate for critical temperature(s) in models with extended scalar sectors  $\rightarrow$  pretty much solved problem...

**Confusion:** complex effective potentials  $\rightarrow$  Why? And why don't we care?

**New goal:** Devise a simple method of obtaining a real effective potential

Shown to be possible, solution is roughly the same as if  $\text{Im}$  part was dropped