

# Higgs group parallel sessions

## 1. Today, 4 contributions

- Precise measurements of the SM Higgs at ILC, simul and analysis (Valeri SAVELIEV)
- Higgs recoil mass analysis with full simul and reconstruction (Martin OHLERICH)
- Correct treatment of external Higgs bosons and effective Higgs couplings (Sven HEINEMEYER)
- Precise calculations for  $H \rightarrow WW/ZZ \rightarrow 4$  fermions with PROPHECY4f (Stefan DITTMAIER)

## 2. Tomorrow, 3 contributions and discussion

# Today's agenda

- Revisited Higgs trilinear coupling measurement (D. Boumedienne)
- Is there a chance to « identify »  $HHZ \rightarrow 10$  jets ? (P. Lutz)
- How to optimise the ILC energy for measuring  $HZ$  (F. Richard)
- Discussion « ILC parameters »

# Questions from the Parameter group

to the Higgs group

# Specific questions (1)

- Assuming a Higgs mass of 120 GeV, what is the achievable precision for the mass measurement? Please provide information for three energies:
  - 1/ threshold scan,
  - 2/ at the maximum of the ZH cross section
  - 3/ 500 GeV

# Higgs mass

	Threshold scan	350 GeV	
Needed L	100fb-1 on 5pts	500 fb-1	
		Pure recoil	qqbb
Precision	230 MeV	103	42
Beamst*2	230 MeV * 1.4	*3	*1.5
	(320 MeV)	(310)	(63)
80% e- Pol	85 fb-1	425 fb-1	
Id + e+ Pol	55 fb-1	275 fb-1	

Systematics are of the order of 30 MeV thus comparable to statistical errors for 500 fb-1

# Specific questions (2)

- What is the expected precision for the measurement of the Higgs branching ratio to tau-pairs?
- What is the expected precision achievable for the measurement of the triple Higgs coupling? Please provide the answer for center of mass energies of both 500 GeV and 1TeV

# For each of the 3 questions

- At what amount of integrated luminosity are systematic effects becoming dominant?
- Is there any impact of decreasing (increasing) beamstrahlung by a factor of two relative to the standard parameters, i.e. trading off luminosity vs background?
- Is there any benefit from electron plus positron polarisation (80 and 60%) or from increased electron polarisation in the absence of positron polarisation?
- Are there other accelerator parameters strongly influencing this measurement?