YM on RS reading group Week 1: Introduction Idea: Apply morse theory to "ooi dimensional space space of bundles over a RS with YM Energy as Morse function S= STIFIXF) = isnitable functional critical pts ~> DXF=0 DF=0 13inne - Morse theory: critical pts of fns tell you about Topology! Com pute Betti numbers

Example: inflection morse index MOX b2 t + b, t + b0 t

you complex lets

you complex H'(T^2)

counts gradient flows. Minima $Z_0 = 0$ Ph \rightarrow take $f = \frac{|Z_0|^2}{|Z_1|^2}$ Critical Maxima $Z_0 = 1$ (1,9,...,0) $Z_1 = 0$

around a critical Pt Gauge gloup (5
group of gauge "Com - "
transommitions
- Equivariant ~ Takes
care of
gauge orbits" stable restricts to these Take the se ideas use "f=" | frxxF to study stable bundles me news a Riemann surface

Stable bundle W 1 ch(v) = deg(V) < deg(W) = m(w) Slope rk(v) = rk(v) Y Subbundles V 5.t V¥0 algebraic Ses allerbs y E Space is over M Sick 1605 10n-haustaf restrict to stable bundles this is now finite dim & 412 with morse - Study this Space theory!

N(n, 9) = "P(fiph) Poincaré t (fiph) Polynomial Think P+ (pn) = 1 km + t2+ --- + t From Number theory N(n) ~ moduli spare No(njk) ~ moduli space with fixed det HOPL MORE [ates!