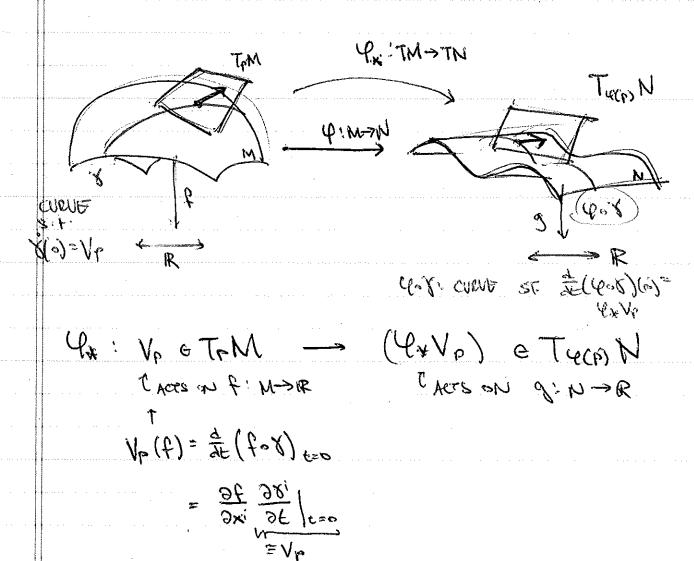
LEC 20: UE ALGEBRAS = TeG

11/7

QM: INWIRION - GENERATORS

RECYL: MAPS BETWEEN MANIFOLDS

DEPINE MAPS BETWEEN TANGENT RUNDUES



	9+VP is DEFINED SIMURUY.
	IN FACT, GIVEN THE INGREDIONTS ABOVE
	( Z> A CURUE & that defines Up)
	(2> 4 MAG (6: M-3N)
Hadder Hadden e James Andrew Novelley was properly his best of the second	PUVP DOES THE ENLY THING IT POSSIBLY ON.
	4/
	(4xVp)(9) = dt(90())
	7
	ETERN N. + IR
	this has to be a
	PATH IN N SUCH THAT
	THE "TIME DERWARVE" @ t=0
	GIVES (Y.VP)
out a secure et maneur en c'honnou en man i l'es l'Eller ma men ma "Pers un le l'Eller	how do we construct such an abject
	using the tools available?
and the state of the	
eronnous semi-terminus storma och un nem storm eronnom eron tred triden sitt er	Po 8 is a path in N
an garaga kan kan kan kan kan kan kan kan kan ka	
والمستقبلة	so define PxVp By Le (40%) t=0
a timen suuremaa sa aastameen alka kalka selektain 1880 on takka kalka selektain sa ka	
; — w (2) \$2] (	then:
	N
Мінтеру спана (приняти на на Пітту При (приняти на 1881 г.).	(UxVP) g = dt (go U) b t=0 = Vpf
and a girl of the Marie Space Basel of the Space Administrative Space and the Space an	La test Conctron on M
	1

BETWEEN MANIPOLDS, GIVEN A MAP BETWEEN MANIFOLDS.

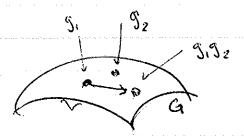
BUT: RECALL: LIE GROUP: GROUP THAT IS MSO A MANIPORD

geg, But MSD 1 MAP g: GxG -> G

eg. UII): eie = 180morphic to SO(2)

 $g_1 = e^{i\theta_1}$ 

9, 92 = ei(A1+A2) eG

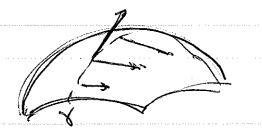


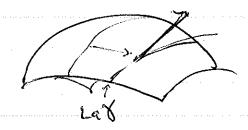
DEPINE A MAP: [LEPT] TRANSLATION BY CI.
FOR a, g & G, then La: G > G is

Lag = ag

THIS IS A MAP "BETWEEN MANIFOLDS"
(except between monifold to itself)

GIHEN FROM OUR WORK ABOUT, CAN MAP TANGENT VECTORS





DEF : A VEC. FLEW IS (LEFT)-INVARIANT IF

(La) x V lg = V lag

80 WHAT? THORE IS A SPECIAL POWER ELEMENT OF EARLY LIE GROVP: IL, THE INSTITUTE. (Sometimes called @)

WE CAN <u>construct</u> [LEPT] INVT. VECTOR PIECDS
BY AUSHING ELECHENTS OF THE TANGENT SPACE
AT U, NETUE

	TeG is
Annual Control of the	1e given v & TyG EASIER TO READ
	then V(v)/g = Lgxv
ACT OF THE PARTY O	the vector @ geg Push N & g
- International Property of the Party of the	Nete
And a second sec	LS,* V
A A A A A A A A A A A A A A A A A A A	Lg2* V
S. William Co.	
Section of the sectio	IN THIS WHY, CAN PUSH A COPY OF VETEG
	TO EVERY TANGENT SPACE, TOG V JEG
· · · · · · · · · · · · · · · · · · ·	ie mapriso TeG -> TG
A Commission of the Commission	WW: SHOW THAT LEFT-THAT VER FIBUD SO DEFUNED
3	IS INDEED (LEFT) INVALLANT:
	(Lg) + (VIg) = (VIag)
The state of the s	(Lg) 4 V (Lag) 4 V
Territoria de la companione de la compan	SO: SIMON SOMETHING AROY? THE
-	COMPOSITIONS OF PUSH FORWARDS.

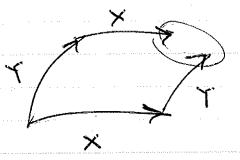
and the second s

SO WE HAVE A MAP: TeG -> TG
IN FACT, THIS MAP IS INVERTIBLE
SO WE CAN MAP TG -> TeG.

> looks like we only have to deal w/

## IMPORTANT CHECK: WHAT ABOUT LIE BRACKET?

recall:



UF BRREVET MEASURED NON COMMUTATURY OF POWS.

Z3 compare to rotating back example THR 13 PRECISECUL THE OMPORTANT SCAUCIUME OF A GROUP!

"interact" of each ofter?

TURNS OUT (HW). LX, Y] 15 LEFT-INVACIANT!

(La) \* [X,Y]/3 = [X,Y]ag

оруу уу оронун тайтай тайры майнайнай орон 1900 года тай	WILLIAM START NAME .
anna ann an an ann an ann an ann an an a	WHAT THIS MEANS:
	the noncommutating @ g is the same as @ @
	Zo TeG seems to tell us everything.
	DEFE: THE UE ALGEBRA OF G IS TOG.  IT IS DEFINED BY THE UE BRACKET,  OR COMMITTEER: [-,-]
	PROPERTIES: 1) [V, W] = -[W, V] (May say)  2) [AV, + BV2, W] = A(V, W) + B(V2, W) (May say)  [[V, W], 2] + [[2, V], W] + [[W, 2], W] = 0  [[V, W], 2] + [[2, V], W] + [[W, 2], W] = 0
	Zo WE ALGERIA IS A VECTOR SPACE WI C.,-J.

STRUCTURE CONSTANTS OF LCG)

WHIS PASSIMG THOUGH THE ORIGIN

$$= \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$$

$$= \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$$

$$= \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$$

	MORE GENERALL O(n)
mm tak say saka (a. 1 sakasan manakan diga aping mgi mgi mgi mmbul sahihar jeun gibu unin mba 14	operator (real) non matorces
along regions the protect protection of the state of the	SOME PARACUSTER FOR A CURVE IN G
	$M(t) M(t)^T = 1 $ orn
$\label{eq:controlled} \ \ \text{$$^{-1}$ and $$^{-1}$ and $^{-1}$ and $$^{-1}$ and $$^{-1}$ and $$^{-1}$ and $$^{-1}$ and $^$	1111000 0000 10000 10000 10000
steen kuutuud kultuu 1988 Amuus Ad Alliankus Vannada en Paris liistenaa dii een Allian kuut	WHAT BOES THUBENT SAME VOOK LIKE?
	MMT + MMT = 0
	EVANTE @ t=0, Where M(0) = 11
·	BY HOICE OF PARAMETERIZATION
A. A. I. III III II A. III A. II A.	-> (gW/tf), + (gW/tf), =0
المعارضة والمعارضة	=> dM(dt/s is quisquascric.
• /	) (It ) is ANTISYMMETRIC.
n Sen All Baltin Andrews (Anna Baltin	
V.A. Note must describe a susting som de procedure of plane and grown and considerable and	DIMENSONALEY: == (1-1).
My . W.	80(e): [ 1]
For SU(N)	
	1 201 / 101 / 101
	80(3): (0)
erriters hill did little by at a manner occusion a sea men a home than the dains all distributed a sentitative	(-10)
er verkeen verken van de komen verkeer verkeer verkeer verkeer verkeer verkeer verkeer verkeer verkeer verkeer Verkeer	

## FROM ALGEBRA TO GROUP:

RECOLL: WHEN WE DID LIE DERIVATIVES (LEC 18)

X" le 1 (E)

expanentiation of a tengent vector.

integral once of a vector field

INTEGRAL CURVE OF LEFT-INVT. LEC. PIECD, V

0(0) = e; o(s) o(t) = o(s+t)

VOIE) = LOEN \* V

o is the integral curts from prevails netted

2-11)

and the second		11
**************************************	L(G)	
d	let exponential me exp: TeG -> G	
	exp(v) = or (1) 4 seen of a	ki wi (Spirish), ba ili wi iliki ili yaz zamirani yappiniki zamirani ya
	1 PARRAM SUBGROUP BENERASTED	
The second secon	How to MAP TO OTHER ECENTERIS?	
	EV = FON (+)	
THE OWNER OF THE OWNER OF THE OWNER OF THE OWNER OF THE OWNER OWNE	Ve TeG	
	ter	det gegen siere deut er maar verken de ste maar de de ste maar de de ste maar de de ste maar de de ste ste de s
A COMPANIED AND A COMPANIED AN	s.t. e((E1+tz)v) = e (v.ebzv	ga jihana a mata a kahi iliili ili sa a mata ilii ili sa a mata ilii ili sa a mata ilii sa a mata ili sa a mat Ili sa a mata ili sa mata ili sa mata ili sa a mata ili sa a mata ili sa a mata ili sa a mata ili sa mata ili
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		restatado em espera en tentra en entre en entre En entre en
STATE OF THE PARTY		of a physical Mantholiffed amendia Addition Management and Additional
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		a de escado de escado de escado de estado de e

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