

## Structure constants of the Lie Algebra:

$$(0, e^{35}, 0, 0.5e^{15}, 0, (-0.5)e^{13})$$

## Symplectic form

$$\omega = e^{12} + e^{34} + e^{56}$$

## Derivatives of 3-forms

$$d(e^{246}) = 0.5e^{1234} + 0.5e^{1256} + (-1)e^{3456}$$

$$d(e^{234}) = 0.5e^{1235}$$

$$d(e^{256}) = 0.5e^{1235}$$

$$d(e^{456}) = (-0.5)e^{1345}$$

$$d(e^{124}) = e^{1345}$$

$$d(e^{126}) = (-1)e^{1356}$$

$$d(e^{346}) = 0.5e^{1356}$$

$$Ker(d^3) \supset \{e^{123}, e^{125}, e^{134}, e^{135}, e^{136}, e^{145}, e^{146}, e^{156}, e^{235}, e^{236}, e^{245}, e^{345}, e^{356}, \}$$

## Derivatives of 2-forms

$$d(e^{26}) = (-0.5)e^{123} + e^{356}$$

$$d(e^{24}) = 0.5e^{125} + (-1)e^{345}$$

$$d(e^{46}) = 0.5e^{134} + 0.5e^{156}$$

$$d(e^{12}) = (-1)e^{135}$$

$$d(e^{34}) = 0.5e^{135}$$

$$d(e^{56}) = 0.5e^{135}$$

$$Ker(d^2) \supset \{e^{13}, e^{14}, e^{15}, e^{16}, e^{23}, e^{25}, e^{35}, e^{36}, e^{45}, \}$$

## $d\Lambda d$ of 3-forms

$$d\Lambda d(e^{246}) = (-1.5)e^{135}$$

## Primitive elements

$$\omega \wedge e^{125} = e^{12345}, \omega \wedge e^{345} = e^{12345},$$

$$\omega \wedge e^{126} = e^{12346}, \omega \wedge e^{346} = e^{12346},$$

$$\omega \wedge e^{123} = e^{12356}, \omega \wedge e^{356} = e^{12356},$$

$$\omega \wedge e^{124} = e^{12456}, \omega \wedge e^{456} = e^{12456},$$

$$\omega \wedge e^{134} = e^{13456}; \quad \omega \wedge e^{156} = e^{13456};$$

$$\omega \wedge e^{234} = e^{23456}; \quad \omega \wedge e^{256} = e^{23456};$$

$$\omega \wedge e^{135} = \omega \wedge e^{136} = \omega \wedge e^{145} = \omega \wedge e^{146} = \omega \wedge e^{235} = \omega \wedge e^{236} = \omega \wedge e^{245} = \omega \wedge e^{246} = 0.$$

### Structure constants of the Lie Algebra:

$$(0, 0, 0, e^{12}, e^{13}, e^{23})$$

### Symplectic form

$$\omega = 2e^{16} + e^{25} + (-1)e^{34}$$

### Derivatives of 3-forms

$$d(e^{245}) = (-1)e^{1234}$$

$$d(e^{146}) = e^{1234}$$

$$d(e^{345}) = (-1)e^{1235}$$

$$d(e^{156}) = e^{1235}$$

$$d(e^{346}) = (-1)e^{1236}$$

$$d(e^{256}) = e^{1236}$$

$$d(e^{456}) = e^{1256} + (-1)e^{1346} + e^{2345}$$

$$Ker(d^3) \supset \{e^{123}, e^{124}, e^{125}, e^{126}, e^{134}, e^{135}, e^{136}, e^{145}, e^{234}, e^{235}, e^{236}, e^{246}, e^{356}, \}$$

### Derivatives of 2-forms

$$d(e^{16}) = (-1)e^{123}$$

$$d(e^{34}) = (-1)e^{123}$$

$$d(e^{25}) = e^{123}$$

$$d(e^{45}) = e^{125} + (-1)e^{134}$$

$$d(e^{46}) = e^{126} + (-1)e^{234}$$

$$d(e^{56}) = e^{136} + (-1)e^{235}$$

$$Ker(d^2) \supset \{e^{12}, e^{13}, e^{14}, e^{15}, e^{23}, e^{24}, e^{26}, e^{35}, e^{36}, \}$$

### $d\Lambda d$ of 3-forms

$$d\Lambda d(e^{456}) = (-3)e^{123}$$

### Primitive elements

$$\omega \wedge e^{125} = (-1)e^{12345};$$

$$\omega \wedge e^{134} = e^{12345};$$

$$\omega \wedge e^{234} = (-2)e^{12346};$$

$$\omega \wedge e^{126} = (-1)e^{12346};$$

$$\omega \wedge e^{235} = (-2)e^{12356};$$

$$\omega \wedge e^{136} = (-1)e^{12356};$$

$$\omega \wedge e^{245} = (-2)e^{12456};$$

$$\omega \wedge e^{146} = (-1)e^{12456};$$

$$\omega \wedge e^{345} = (-2)e^{13456};$$

$$\omega \wedge e^{156} = (-1)e^{13456};$$

$$\omega \wedge e^{256} = (-1)e^{23456};$$

$$\omega \wedge e^{346} = e^{23456};$$

$$\omega \wedge e^{123} = \omega \wedge e^{124} = \omega \wedge e^{135} = \omega \wedge e^{145} = \omega \wedge e^{236} = \omega \wedge e^{246} = \omega \wedge e^{356} = \omega \wedge e^{456} = 0.$$

## Structure constants of the Lie Algebra:

$$(0, 0, 0, e^{15}, 0, e^{13})$$

## Symplectic form

$$\omega = e^{12} + e^{34} + e^{56}$$

## Derivatives of 3-forms

$$d(e^{246}) = (-1)e^{1234} + e^{1256}$$

$$d(e^{256}) = (-1)e^{1235}$$

$$d(e^{234}) = e^{1235}$$

$$d(e^{456}) = e^{1345}$$

$$d(e^{346}) = e^{1356}$$

$$Ker(d^3) \supset \{e^{123}, e^{124}, e^{125}, e^{126}, e^{134}, e^{135}, e^{136}, e^{145}, e^{146}, e^{156}, e^{235}, e^{236}, e^{245}, e^{345}, e^{356}, \}$$

## Derivatives of 2-forms

$$d(e^{26}) = e^{123}$$

$$d(e^{24}) = e^{125}$$

$$d(e^{46}) = (-1)e^{134} + e^{156}$$

$$d(e^{56}) = (-1)e^{135}$$

$$d(e^{34}) = e^{135}$$

$$Ker(d^2) \supset \{e^{12}, e^{13}, e^{14}, e^{15}, e^{16}, e^{23}, e^{25}, e^{35}, e^{36}, e^{45}, \}$$

## $d\Lambda d$ of 3-forms

$$d\Lambda d(e^{246}) = (-2)e^{135}$$

## Primitive elements

$$\omega \wedge e^{125} = e^{12345}, \omega \wedge e^{345} = e^{12345},$$

$$\omega \wedge e^{126} = e^{12346}, \omega \wedge e^{346} = e^{12346},$$

$$\omega \wedge e^{123} = e^{12356}, \omega \wedge e^{356} = e^{12356},$$

$$\omega \wedge e^{124} = e^{12456}, \omega \wedge e^{456} = e^{12456},$$

$$\omega \wedge e^{134} = e^{13456}, \omega \wedge e^{156} = e^{13456},$$

$$\omega \wedge e^{234} = e^{23456}, \omega \wedge e^{256} = e^{23456},$$

$$\omega \wedge e^{135} = \omega \wedge e^{136} = \omega \wedge e^{145} = \omega \wedge e^{146} = \omega \wedge e^{235} = \omega \wedge e^{236} = \omega \wedge e^{245} = \omega \wedge e^{246} = 0.$$

### Structure constants of the Lie Algebra:

$$(0, 0, 0, 0, e^{12}, e^{13})$$

### Symplectic form

$$\omega = (-1)e^{14} + e^{26} + e^{35}$$

### Derivatives of 3-forms

$$d(e^{246}) = (-1)e^{1234}$$

$$d(e^{345}) = e^{1234}$$

$$d(e^{256}) = (-1)e^{1235}$$

$$d(e^{356}) = (-1)e^{1236}$$

$$d(e^{456}) = (-1)e^{1246} + e^{1345}$$

$$Ker(d^3) \supset \{e^{123}, e^{124}, e^{125}, e^{126}, e^{134}, e^{135}, e^{136}, e^{145}, e^{146}, e^{156}, e^{234}, e^{235}, e^{236}, e^{245}, e^{346}, \}$$

### Derivatives of 2-forms

$$d(e^{35}) = (-1)e^{123}$$

$$d(e^{26}) = e^{123}$$

$$d(e^{45}) = (-1)e^{124}$$

$$d(e^{56}) = e^{126} + (-1)e^{135}$$

$$d(e^{46}) = (-1)e^{134}$$

$$Ker(d^2) \supset \{e^{12}, e^{13}, e^{14}, e^{15}, e^{16}, e^{23}, e^{24}, e^{25}, e^{34}, e^{36}, \}$$

### $d\Lambda d$ of 3-forms

$$d\Lambda d(e^{456}) = (-2)e^{123}$$

### Primitive elements

$$\omega \wedge e^{124} = (-1)e^{12345}; \omega \wedge e^{235} = (-1)e^{12345};$$

$$\omega \wedge e^{236} = (-1)e^{12346};$$

$$\omega \wedge e^{134} = e^{12346};$$

$$\omega \wedge e^{126} = e^{12356}; \omega \wedge e^{135} = e^{12356};$$

$$\omega \wedge e^{145} = e^{12456}; \omega \wedge e^{256} = e^{12456};$$

$$\omega \wedge e^{146} = (-1)e^{13456};$$

$$\omega \wedge e^{356} = e^{13456};$$

$$\begin{aligned}\omega \wedge e^{246} &= (-1)e^{23456}; \quad \omega \wedge e^{345} = (-1)e^{23456}; \\ \omega \wedge e^{123} &= \omega \wedge e^{125} = \omega \wedge e^{136} = \omega \wedge e^{156} = \omega \wedge e^{234} = \omega \wedge e^{245} = \omega \wedge e^{346} = \\ \omega \wedge e^{456} &= 0.\end{aligned}$$

### Structure constants of the Lie Algebra:

$$((-2)e^{15}, 2e^{25}, (-2)e^{36}, 2e^{46}, 0, 0)$$

### Symplectic form

$$\omega = e^{12} + e^{34} + e^{56}$$

### Derivatives of 3-forms

$$d(e^{123}) = (-2)e^{1236}$$

$$d(e^{124}) = 2e^{1246}$$

$$d(e^{134}) = (-2)e^{1345}$$

$$d(e^{135}) = (-2)e^{1356}$$

$$d(e^{136}) = 2e^{1356}$$

$$d(e^{145}) = 2e^{1456}$$

$$d(e^{146}) = 2e^{1456}$$

$$d(e^{234}) = 2e^{2345}$$

$$d(e^{235}) = (-2)e^{2356}$$

$$d(e^{236}) = (-2)e^{2356}$$

$$d(e^{246}) = (-2)e^{2456}$$

$$d(e^{245}) = 2e^{2456}$$

$$Ker(d^3) \supset \{e^{125}, e^{126}, e^{156}, e^{256}, e^{345}, e^{346}, e^{356}, e^{456}, \}$$

### Derivatives of 2-forms

$$d(e^{13}) = 2e^{135} + 2e^{136}$$

$$d(e^{14}) = 2e^{145} + (-2)e^{146}$$

$$d(e^{16}) = (-2)e^{156}$$

$$d(e^{23}) = (-2)e^{235} + 2e^{236}$$

$$d(e^{24}) = (-2)e^{245} + (-2)e^{246}$$

$$d(e^{26}) = 2e^{256}$$

$$d(e^{35}) = 2e^{356}$$

$$d(e^{45}) = (-2)e^{456}$$

$$Ker(d^2) \supset \{e^{12}, e^{15}, e^{25}, e^{34}, e^{36}, e^{46}, e^{56}, \}$$



### **$d\Lambda d$ of 3-forms**

$$d\Lambda d(e^{135}) = (-4)e^{135} + (-4)e^{136}$$

$$d\Lambda d(e^{136}) = 4e^{135} + 4e^{136}$$

$$d\Lambda d(e^{145}) = 4e^{145} + (-4)e^{146}$$

$$d\Lambda d(e^{146}) = 4e^{145} + (-4)e^{146}$$

$$d\Lambda d(e^{235}) = 4e^{235} + (-4)e^{236}$$

$$d\Lambda d(e^{236}) = 4e^{235} + (-4)e^{236}$$

$$d\Lambda d(e^{245}) = (-4)e^{245} + (-4)e^{246}$$

$$d\Lambda d(e^{246}) = 4e^{245} + 4e^{246}$$

### **Primitive elements**

$$\omega \wedge e^{125} = e^{12345}; \quad \omega \wedge e^{345} = e^{12345};$$

$$\omega \wedge e^{126} = e^{12346}; \quad \omega \wedge e^{346} = e^{12346};$$

$$\omega \wedge e^{123} = e^{12356}; \quad \omega \wedge e^{356} = e^{12356};$$

$$\omega \wedge e^{124} = e^{12456}; \quad \omega \wedge e^{456} = e^{12456};$$

$$\omega \wedge e^{134} = e^{13456}; \quad \omega \wedge e^{156} = e^{13456};$$

$$\omega \wedge e^{234} = e^{23456}; \quad \omega \wedge e^{256} = e^{23456};$$

$$\omega \wedge e^{135} = \omega \wedge e^{136} = \omega \wedge e^{145} = \omega \wedge e^{146} = \omega \wedge e^{235} = \omega \wedge e^{236} = \omega \wedge e^{245} = \omega \wedge e^{246} = 0.$$