

Prototype AT-TPC

March 18, 2010

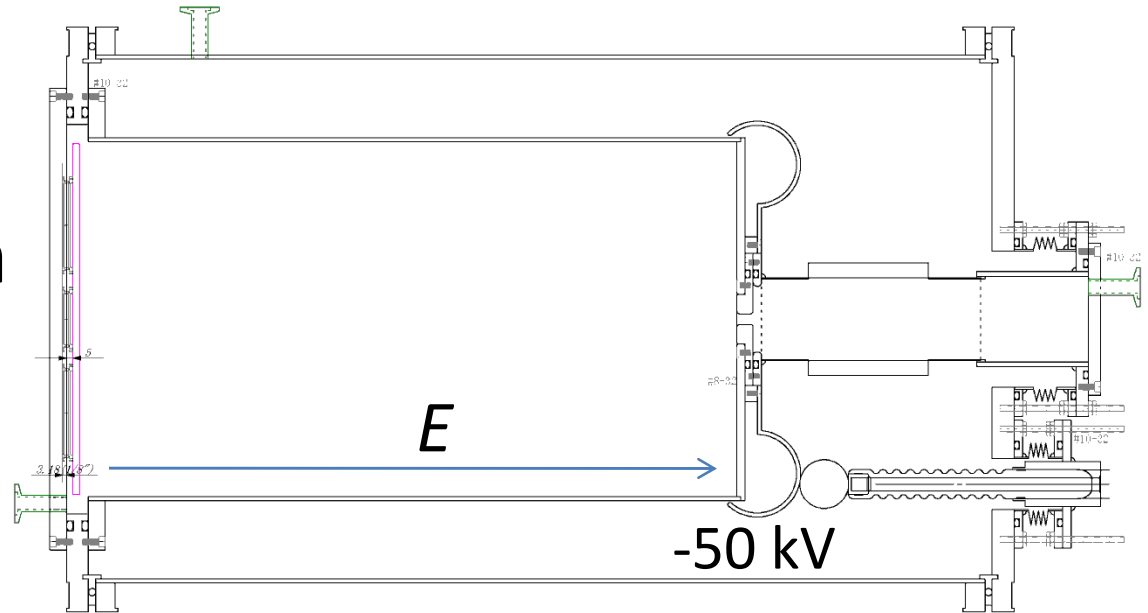
Weekly Meeting

Daisuke Suzuki, NSCL

Field cage: Basic concepts

Specifications

- Gas tight
- 50 kV at maximum
- 1 kV/cm

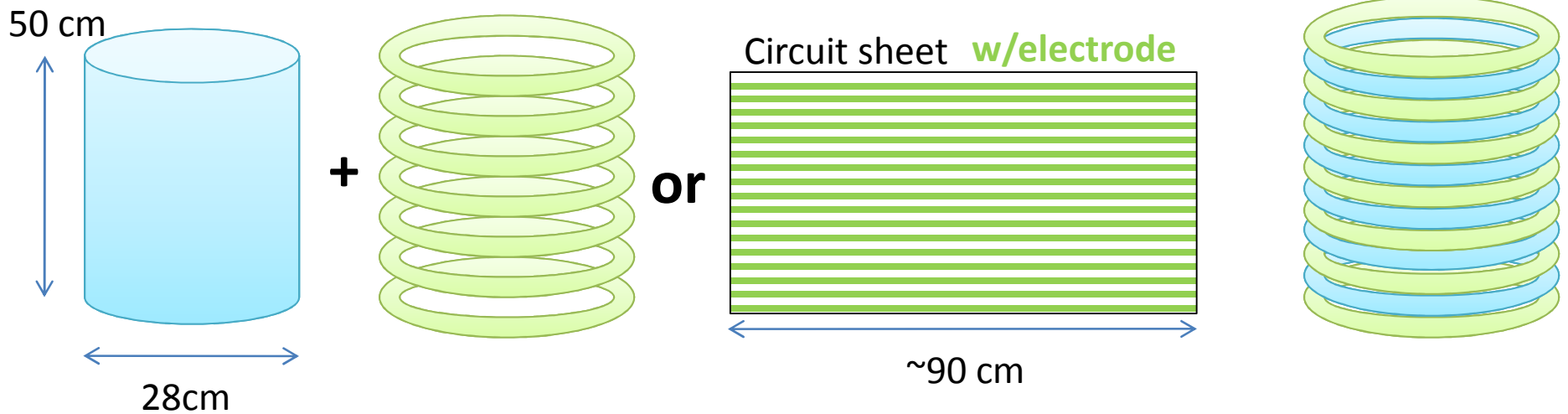


Risk

- Sparking between neighboring electrodes
- Permanent damages

Field cage: Ideas

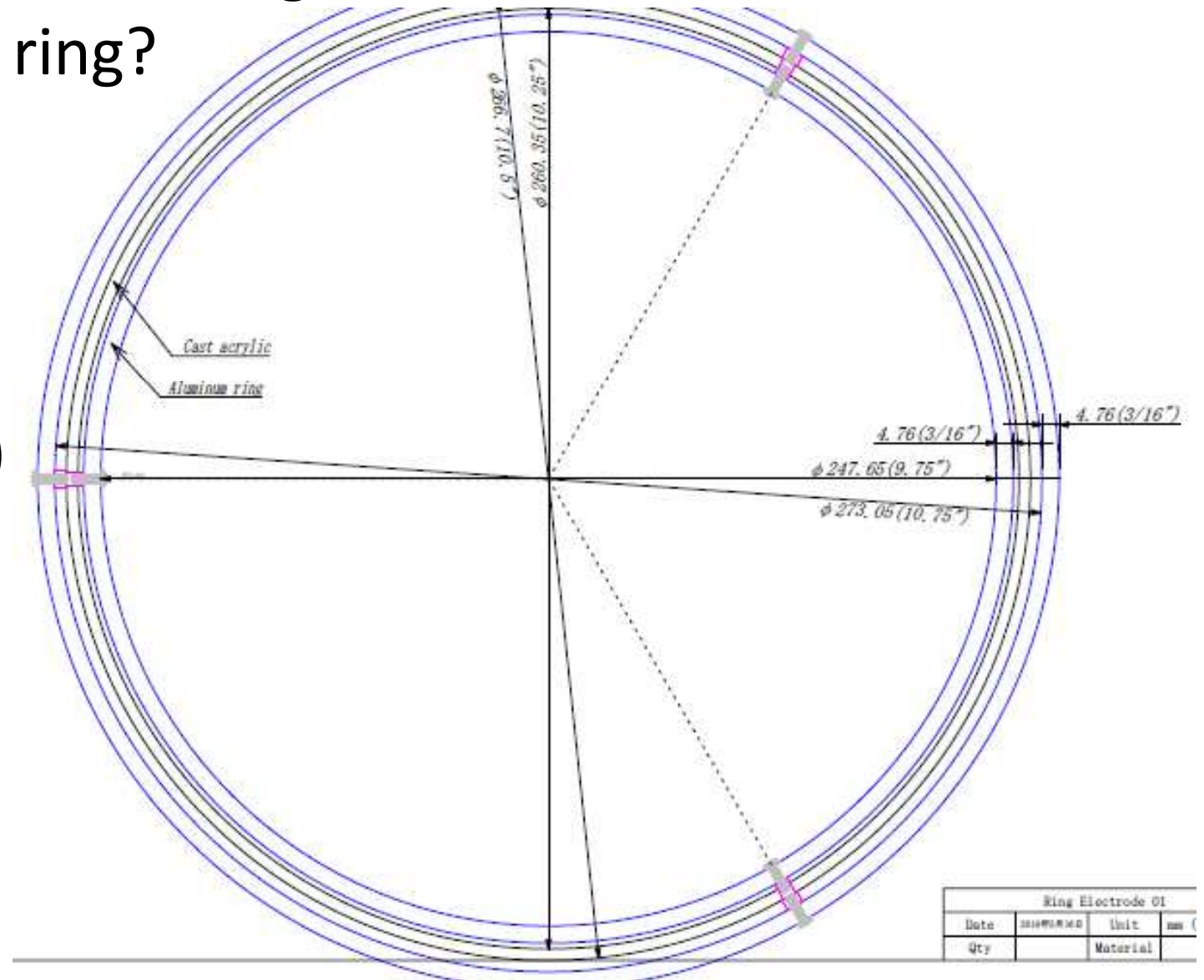
- G10 + Ring
- G10 + Foil electrodes
- G10-Ring electrode stack
- Resistive glass



Test

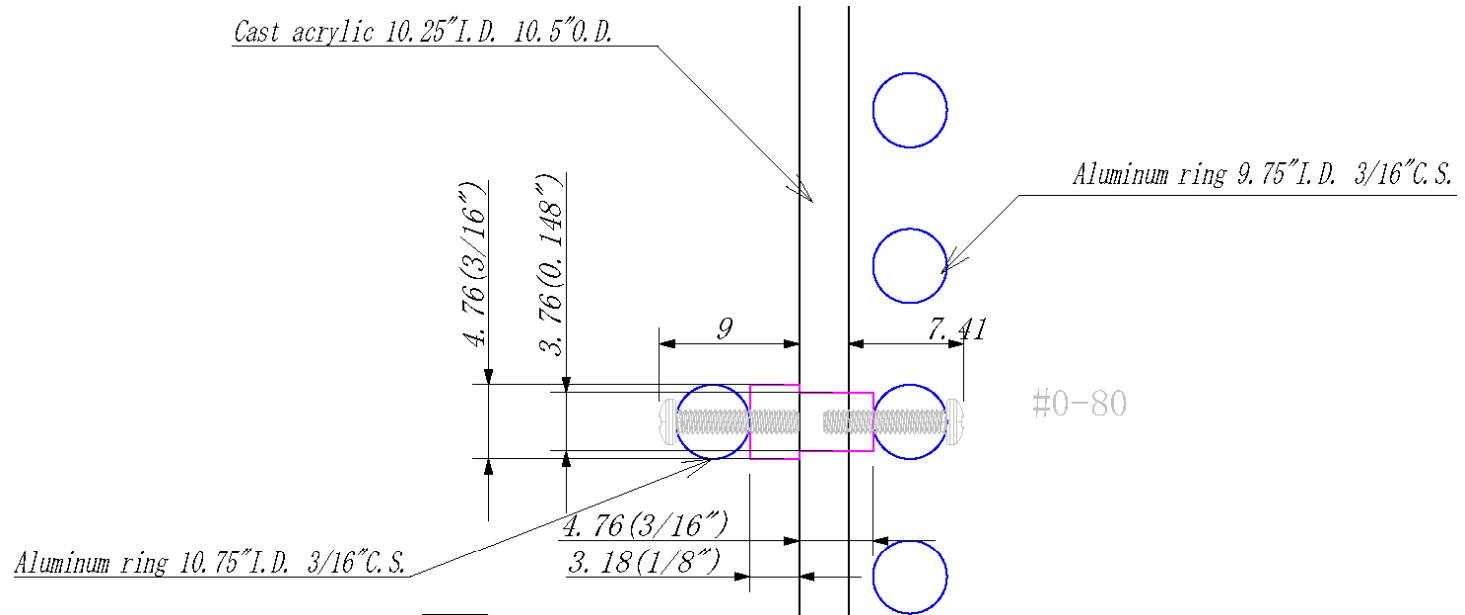
- How to fabricate a ring?
- How to fix a ring?

Acrylic tube
(10.5" O.D.)

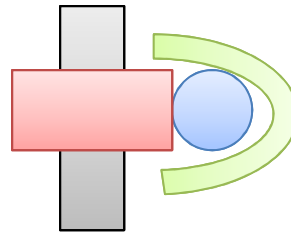


Fixing jig

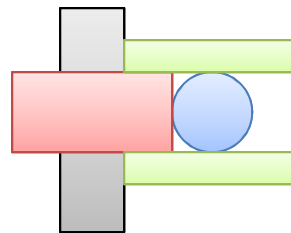
- Screw



- Clip



- Parallel plates



Which one is for the first attempt?

Purchasing of a scroll pump

- A part of the new gas handling system
- It is nice to have one as soon as possible.

Edward XDS10



Pump speed: 6.5 cfm = 184 L/min
 Ultimate pressure: 0.05 Torr
 No lubricated bearings inside the vacuum
 3,950 USD

Chose by Ana & Fernando

	Hz	Units	XDS5	XDS10	XDS35i
VACUUM DATA					
Peak pumping speed ^{1,2}	60	cfm	3.5	6.5	21
	50	m ³ /h	4.8	9.3	35
Ultimate pressure (Total)	60	Torr	0.05	0.05	0.0075
	50	mbar	0.07	0.07	0.01
Ultimate pressure GB I (Total)	50/60	Torr	0.09	0.09	0.015
		mbar	0.15	0.15	0.02
Ultimate pressure GB II (Total)	50/60	Torr	-	-	0.022
		mbar	-	-	0.03
High throughput mode	50/60	Torr	-	-	-
		mbar	-	-	-
Water vapor tolerance		Torr	38	23	
		mbar	50	35	
Water vapor capacity - GB I		g/h	70	70	70
Water vapor capacity - GB II		g/h	200	200	200
MOTOR DATA					
Motor rating 1 phase (nominal)	60	W	300	300	520
	50	W	300	300	520
Motor rating 3 phase		W	300	300	-
Nominal rotation speed	60	rpm	1800	1800	1800
	50	rpm	1500	1500	1800
PHYSICAL DATA					
Weight		lb	51	54	106
		kg	23	24.5	48
Inlet flange			NW25	NW25	NW40
Exhaust flange			NW25	NW25	NW40
Noise level	50/60 ³	dBa	55	55	57
Leak tightness		mbar l/s	<1 x 10 ⁻⁶	<1 x 10 ⁻⁶	<1 x 10 ⁻⁶
Operating temperature range		°C	10 to 40	10 to 40	10 to 40
		°F	50 to 104	50 to 104	50 to 104