

CONCLUSIONI

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FIRST BUDGET INSTALLMENT

The requested budget allows timely installation of activities foreseen in Phase I: frequency dependent squeezing, and Newtonian noise cancellation. Moreover time critical tasks for Phase II can commence

About 1.6 M€ should be allocated in 2018

Core optical, electronics and mechanical components

Large mirror equipment and cleanroom upgrade, payload and super-attenuator development

Phase	Item	Completed	BNS range [Mpc]	Cost [M€]
AdV-O3		2019	60 - 80	
AdV design	Tuned signal recycling + 125 W	2021	120	
AdV+	Frequency dependent squeezing (FDS)	2021	150	3.5
	Newtonian noise cancellation (NNC)	2021	160	
	Large mirror development (LM)	2021		2.2
	Coating material development (VCRD)	2021		0.9
	Contingency (20 %)			1.3
	AdV+ first installment request			8.0

PREVENTIVI 2019

Budget: Phase I and preparation for Phase II

- ✓ Frequency dependent squeezing (3,5M€)
- ✓ Newtonian Noise cancellation (in kind)
- ✓ Virgo coating R&D (1M€)
- ✓ Large mirrors (PAY – SAT – TCS) (2,2M€)
- ✓ Contingency 20% (1,3M€)

“A total amount of 8.0 M€ is requested”

INFN: **Task** → **WBS** (discussione ongoing)

Schema finanziamento:

AdV+ → INFN ~40% → ~3,2 M€ (tre anni, incl 500 k€ conting) →
~890k€/anno+contingency su fondi MIUR

CSN2 → missioni + R&D EPR + NN + ordinaria amministrazione
in linea con le richieste degli anni precedenti

RIEPILOGO RICHIESTE

Gruppo	FTE	Missioni	Adv+COAT	Adv+FDS	Adv+EPR	Adv+LM-PAY	Adv+LM-SAT	Adv+LM-TCS	Adv+NN	ALTRO
FI	5,20	45,00	13,50			33,50				2,50
GE	5,30	39,00	38,50	24,50	39,00		7,00		11,50	
GSGC	7,80	70,00							3,00	
LNS-SS	1,50	10,00								
MIB	2,80	19,00								3,00
NA	5,40	76,00		83,80	19,20				26,00	18,50
PD	7,20	56,00		40,00	55,50					
PG	5,50	75,00	45,00		26,50	84,00				17,00
PI	11,50	122,00	28,00		60,00		90,00		0,50	78,00
RM1	11,30	108,00			11,00	122,00				41,00
RM2	9,00	87,00	28,00		56,00			62,50		21,50
RM3	1,70	14,00								
SA	7,60	15,00	34,00							
TIFPA	6,40	54,00		19,00	19,00					
TO	5,10	22,00								7,00
TS	1,50	10,00								
VIRGO	94,80	822,00	187,00	167,30	286,20	239,50	97,00	62,50	41,00	188,50

MISSIONI 820
 EPR 280
 NN 40
 ALTRO 190

Adv+ (FDS+PAY+SAT+TCS+COAT) 750

SCHEMA DI FINANZIAMENTO 2019

FDS budget & spending profile	
Item	Cost [k€]
Minitower and associated optics, electronics	550
Microtower for cavity control	420
Two microtowers for cavity mirrors	300
Cavity mirrors	150
End cavity optical bench with optics and electronic	40
Cavity beam tube (300 m) and supports	250
Vacuum pumps and controls (4 pumps)	100
Microtowers clean areas	40
Infrastructure modification for the end cavity microtower	40
Squeezed light source	320
AdV+: Losses reduction on detection	100
AdV+: EPR Entanglement for FDS - R&D support	160
AdV+: Improved FDS with filter cavities	100
Infrastructure	244
Infrastructure for dedicated R&D laboratories	671
Total	3.485

A carico CSN2:

MISSIONI	580
EPR	100
NN	40
ALTRO	190
	910

A carico MIUR:

AdV+	830
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Dalla richiesta EPR vanno sottratti $160/2 \sim 80$ k€/anno

Il resto $280-80 = 200$ spalmato su due anni sul budget CSN2: ~ 100 k€/anno