

# Nd:YAG Laser Procurement

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# LIGO Switch to Nd:YAG Laser

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- Technical Reasons -
  - Improved reliability
  - Move towards higher power
  - Strongly supported by NSF review committee
- LIGO budget for the Nd:YAG Laser
  - Nd:YAG change now saves operations money that was planned for future laser upgrades
  - LIGO CCB action budgeted
    - Nd:YAG laser development           \$800K
    - Three lasers                               \$110K (each)

# Key Nd:YAG Laser Parameters

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- Nd:YAG laser specification was finalized January 96 with review and sign off
- Key Parameters -
  - Single Frequency
  - 10 Watt
  - Diode pumped
  - Excellent beam quality
  - Low intrinsic noise

# Procurement Package

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- **Scope of Work**

- Develop a Nd:YAG laser to LIGO specification
- Build and deliver three 10 watt Nd:YAG lasers
- Priced option for the purchase of up to five additional lasers.

# RFP Recipients

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- Six Companies received the RFP
  - Spectra-Physics Laser
  - Lightwave
  - Coherent Laser
  - Continuum
  - Schwartz Electro-Optics
  - Fibertech

# Response to the RFP

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- Responses -
  - Five no bids
  - One proposal received from Lightwave
- Reasons -
  - Some companies' normal business practice does not include responding to RFP
  - Very specialized requirements
  - Interested only if it supports their commercial markets

# Lightwave Background

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- Lightwave company background -
  - 85 employees
  - \$10 million in sales
  - 10 Years in business
  - Preeminent supplier of single frequency highly stabilized Nd:YAG lasers in the world
  - Experienced at working with the scientific community

# Lightwave Technical Proposal

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- Technical proposal -
  - Strong expertise with single frequency lasers
  - Strong commitment to scientific market
  - Key Personnel - project manager was NPRO inventor
  - Reference checks were extremely positive
    - company praised for knowledge, responsiveness



# Lightwave Cost Proposal

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- Lightwave Costs -

■ Development	\$360,424
■ First three lasers	\$125,000 (each)
■ Next three optional lasers	\$100,000 (each)
■ Total cost for 6 lasers	\$1,035,424

- LIGO Budget -

■ Development	\$800,000
■ Six lasers	\$110,000 (each)
■ Total LIGO budget for 6 lasers	<u>\$1,460,000</u>

- Savings - 29% below budget, saves \$424,576

# Lightwave Contractual Issues

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- Some concern about a fixed priced development contract
  - Technical confidence of 95% but concerned about cost risk for small specification short fall
- Warranty provisions - broad disclaimers were scaled back by CIT legal counsel

# Summary

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- LIGO recommends awarding a contract to Lightwave for laser development and delivery of three lasers
- Lightwave is the technically preferred company
- Costs are well below LIGO's budget