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Measurement and alignment results

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- What has been done
- Requests and Constraints
- Results and Conclusion

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- What has been done
  - Measurements in vertical, transversal tilt, radial, and longitudinal direction
  - All dipoles, quads, BPM's
    - Height measurement with optical level
    - Tilt measurement with special tool (quads) and electronical spirit level for bends and BPM's
    - Radial measurement with stretched nylon wire and theodolite
    - Distances with AT401 (high precision total station)

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- **Measurement results**
  - Vertical and tilt offsets
  - Radial and longitudinal offsets

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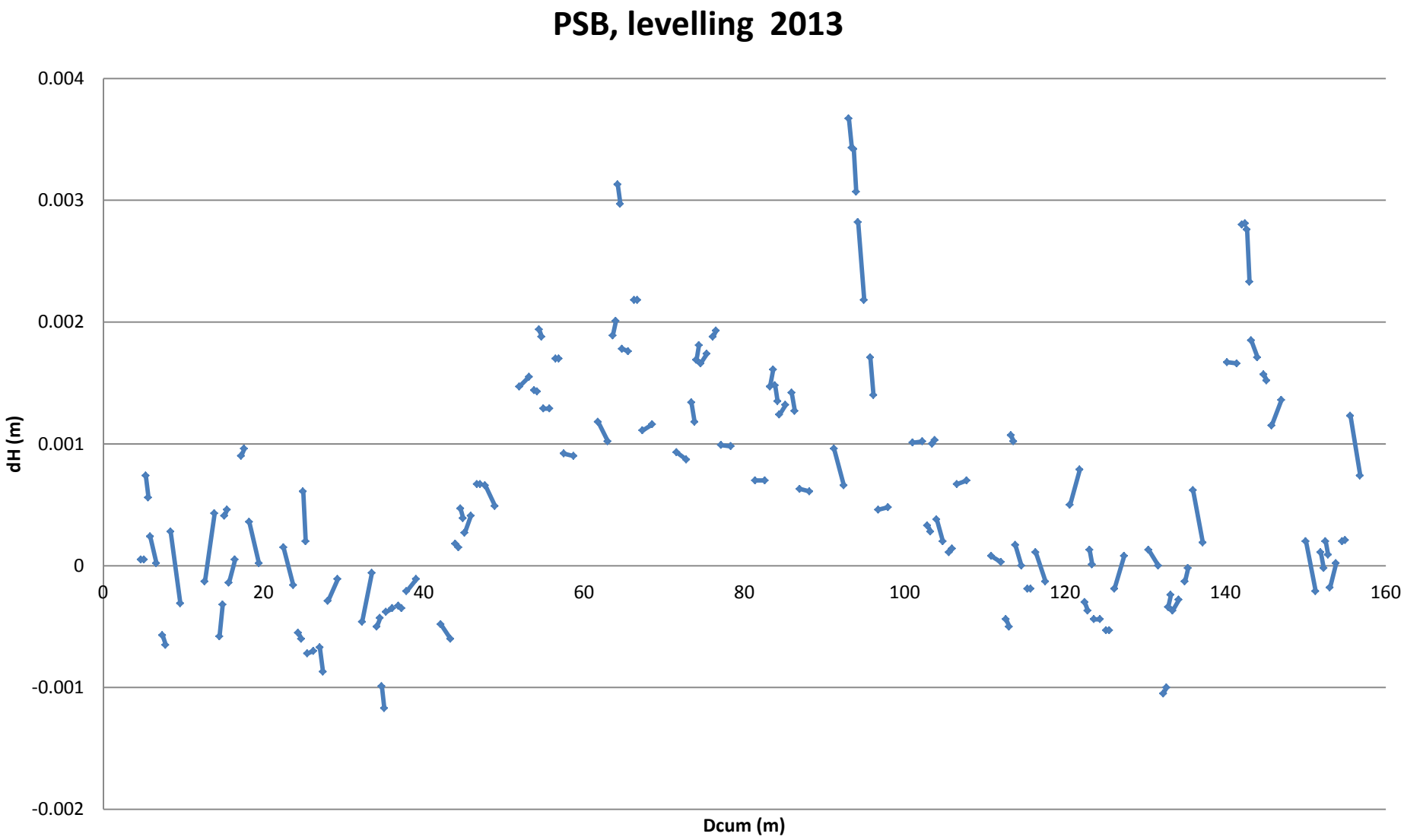

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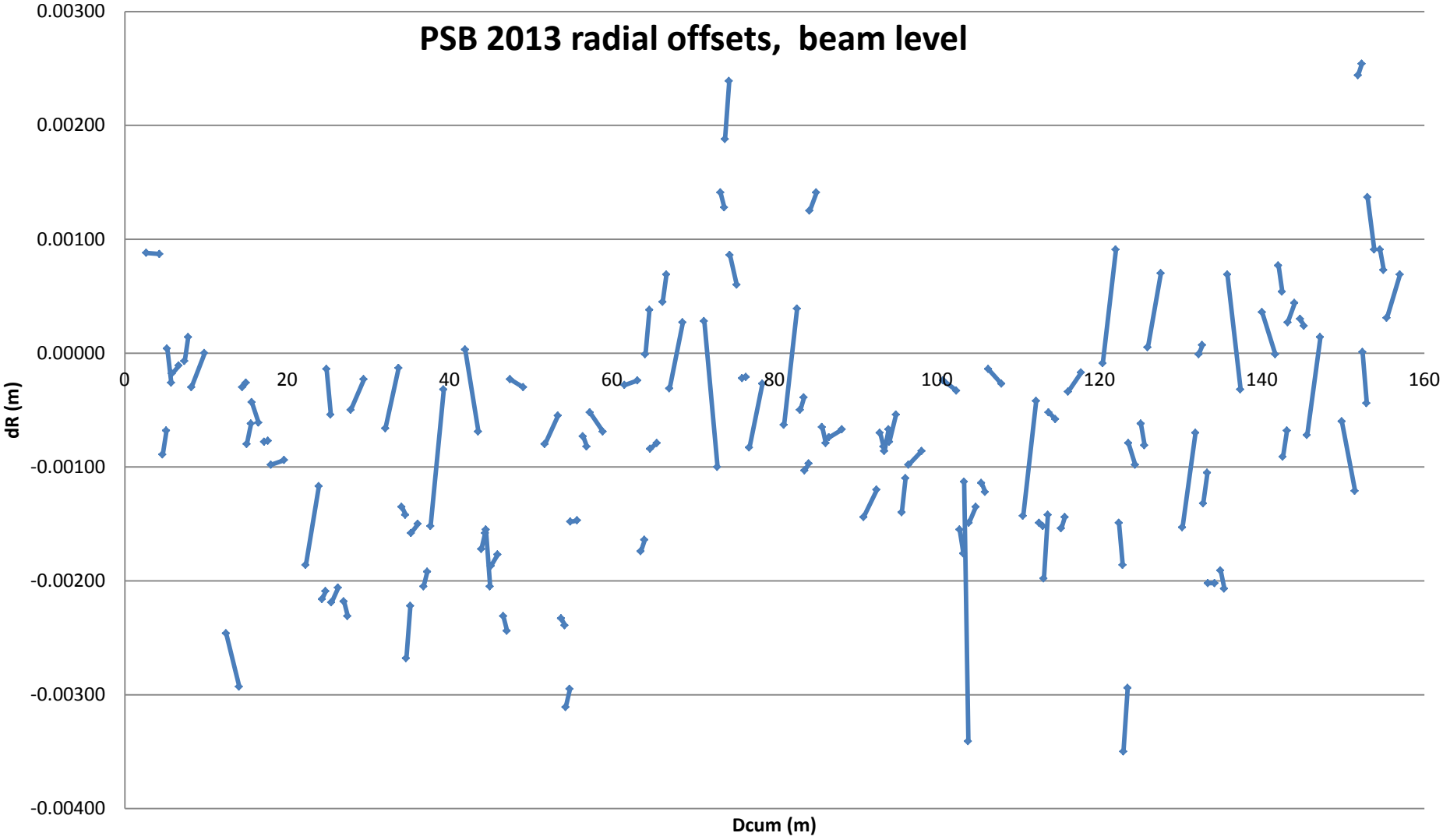

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- **Requests and constraints**
  - SU delivered these results to OP
  - A proposal for the partial vertical and radial alignment was made by OP, including tilt alignment of the quads and 3 dipoles and suppression of the bumps.
    - Vertical: around a smooth curve proposed by OP
    - Radial: quads and BPM's to 0, and bends remaining at their actual position, besides 3 where the tilt should be corrected.
    - Discussions with RP and VAC (ALARA, chamber constraints)

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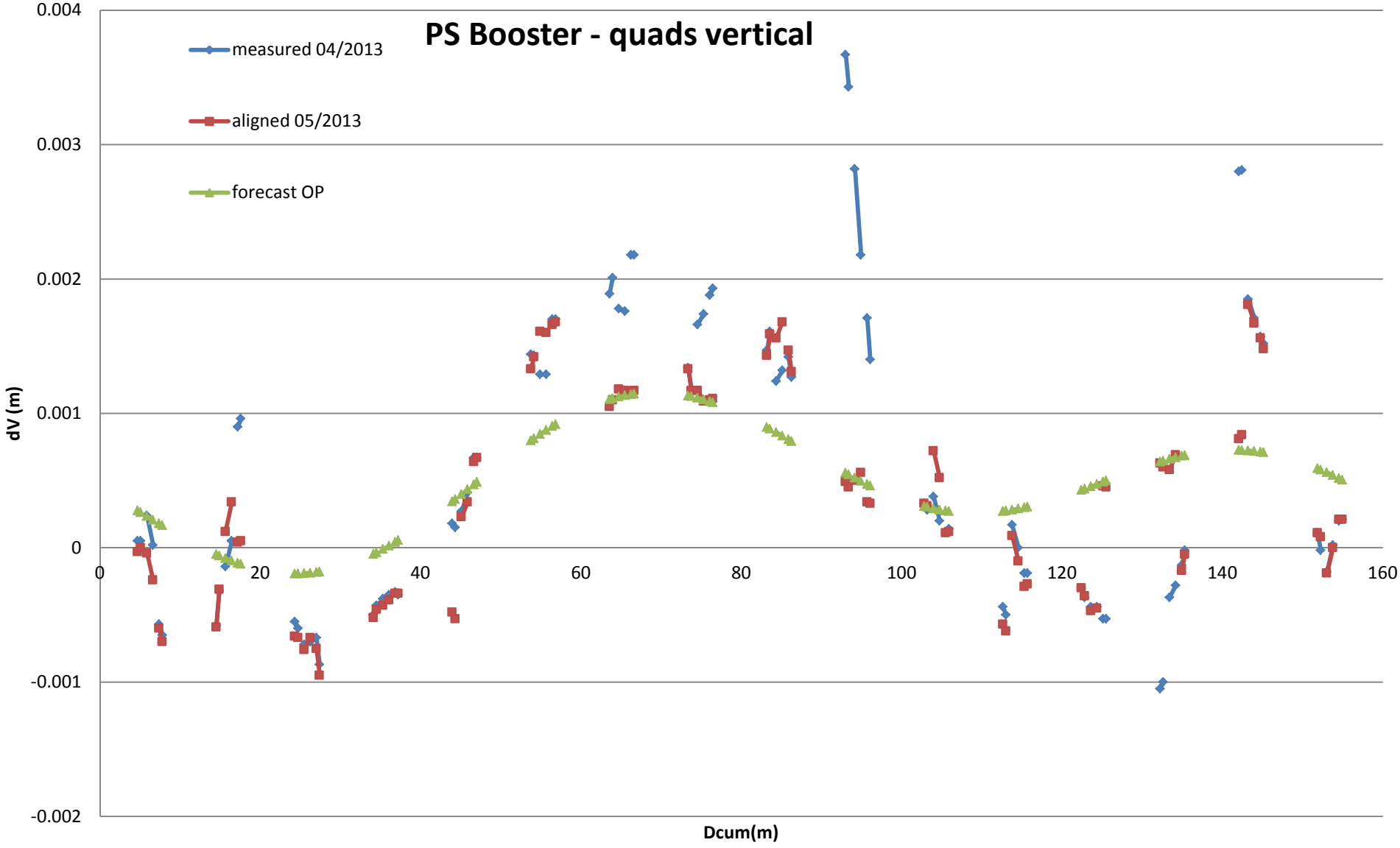

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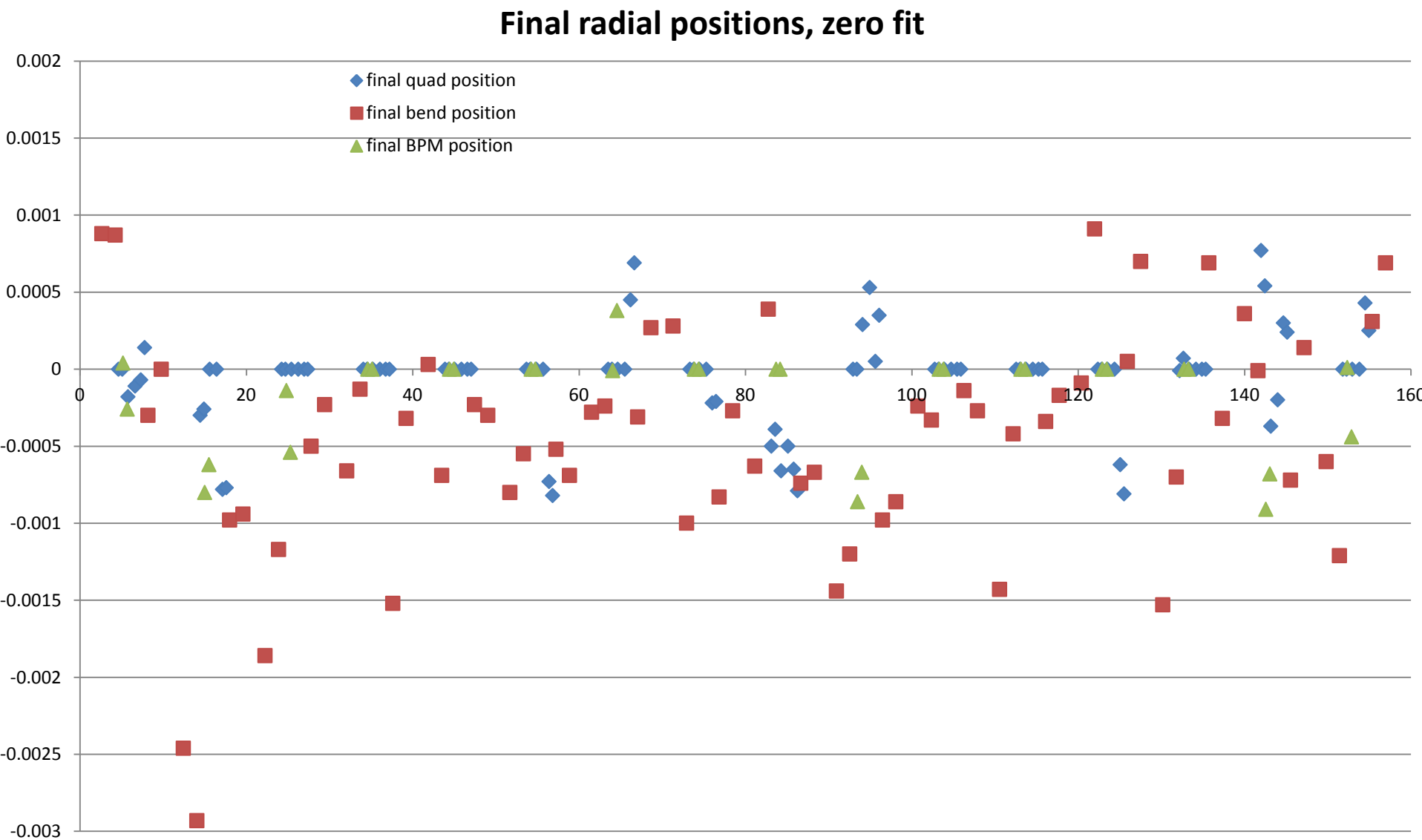

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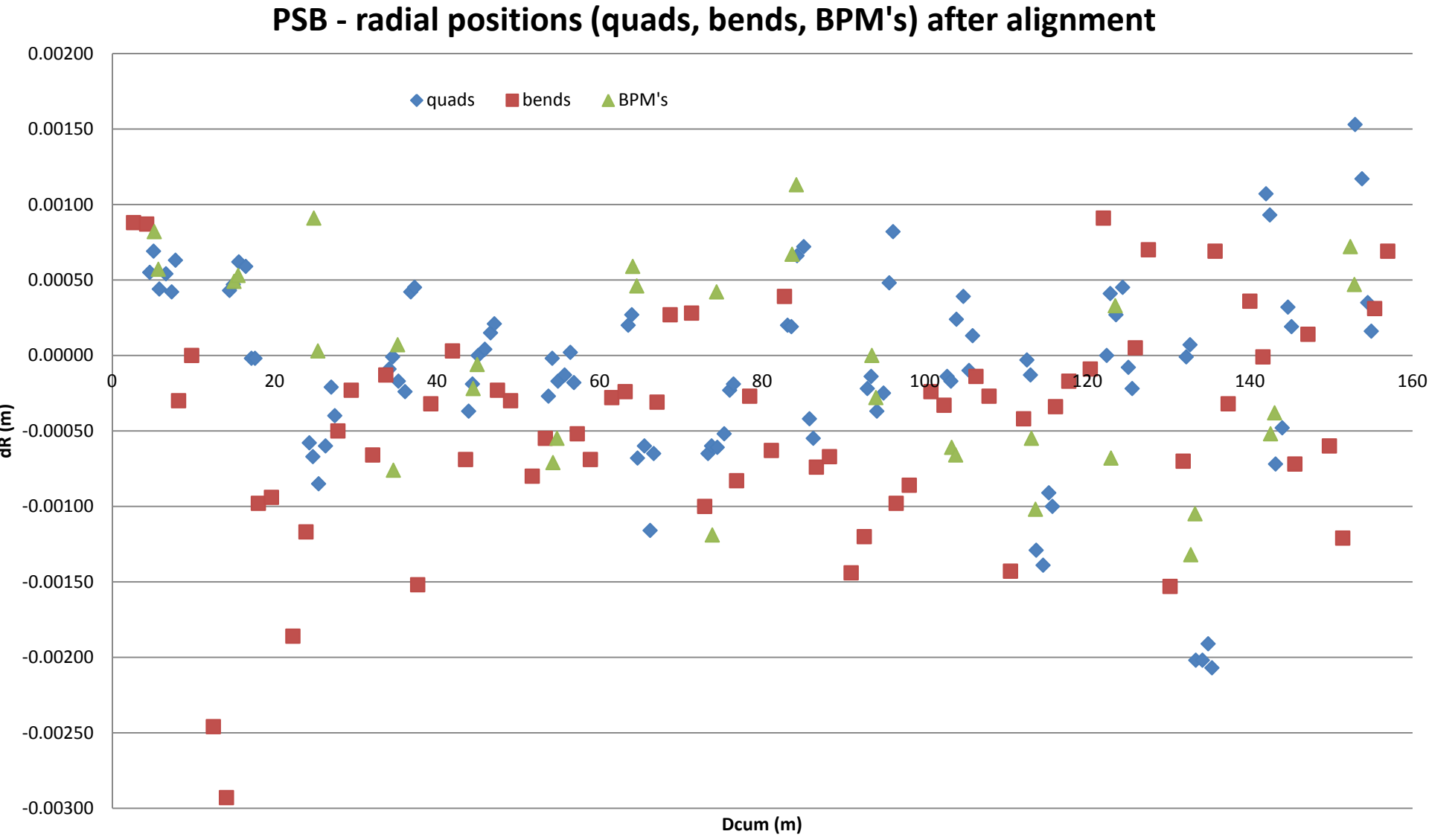

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- **Conclusions**
  - SU measured and aligned the quads and BPM's of the PSB
  - In the vertical plane, the results are within ± 0.5mm around the proposed smooth curve.
  - In radial, besides some exceptions due to access constraints to the moving devices / screws, the solution «3B» (quad zero fit) could be applied.
  - We are now looking forward to «see» the beam pass into and turn in this «new» machine.