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Application potential of round wires/cables made from CC tapes

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Why cables?

- maximal tape critical current is limited

- maximal tape length is limited

- possibility to bend

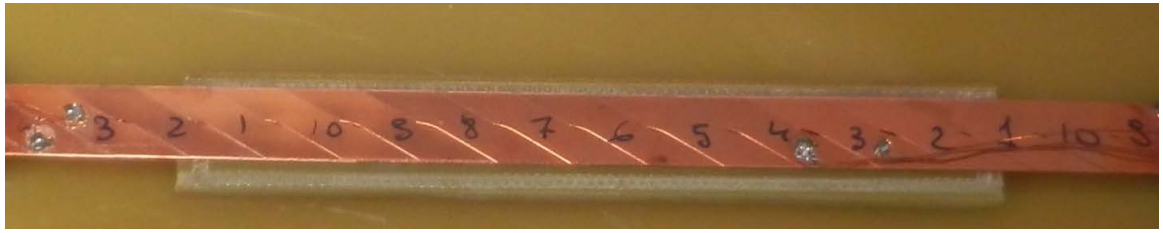
- equal electromagnetic conditions in all wires

- low AC loss

Cable concepts

Twisted stack

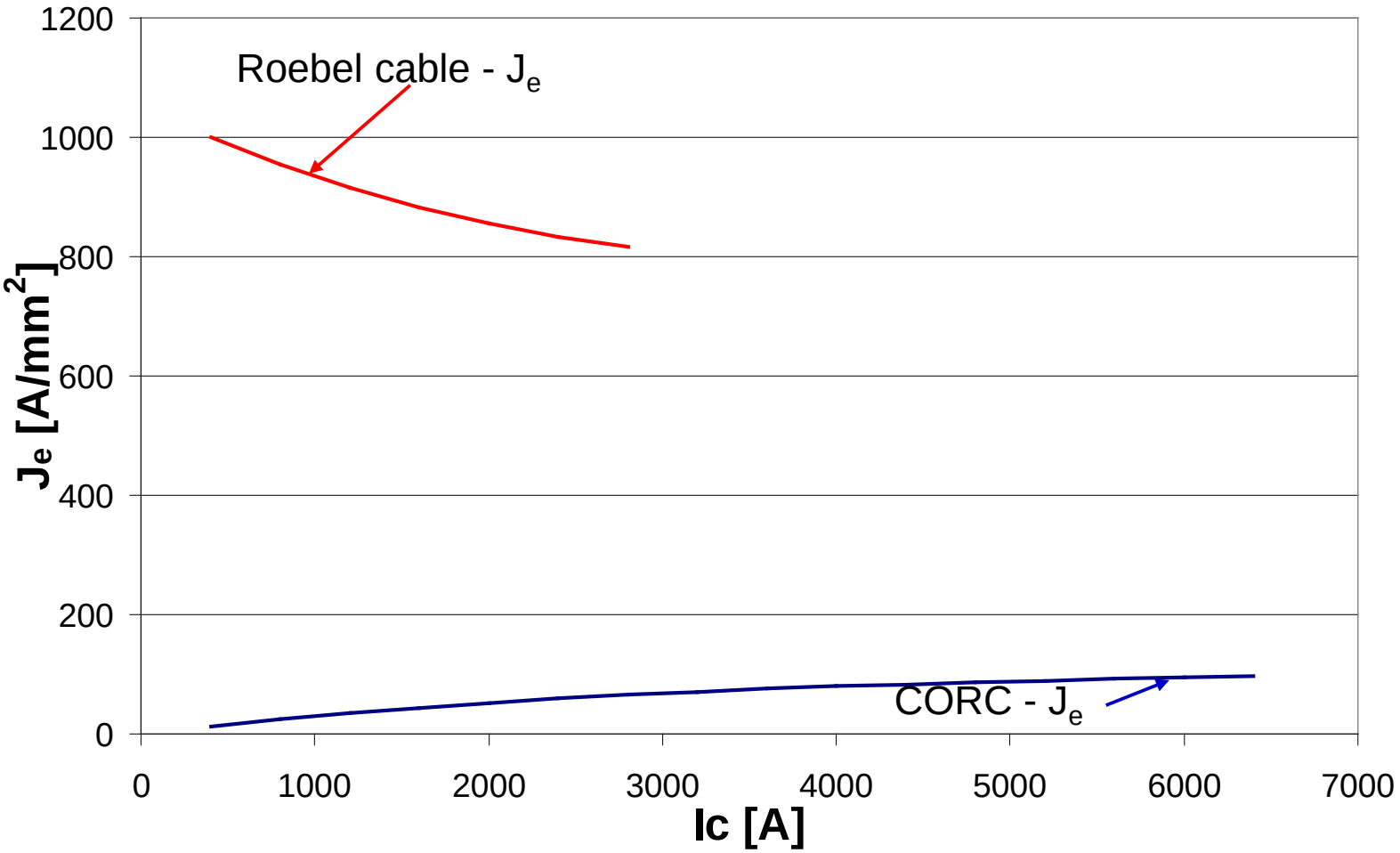
Roebel cable



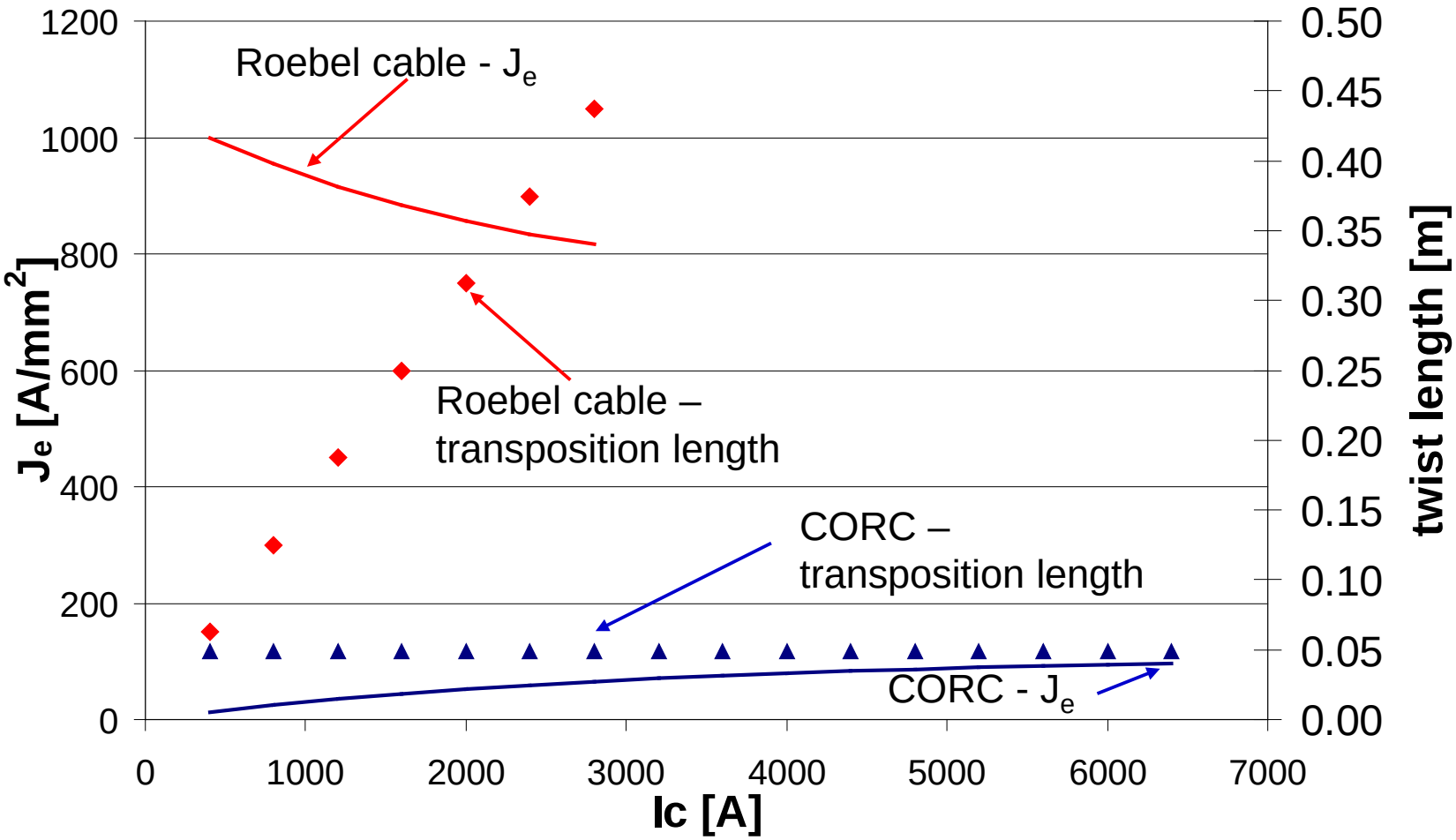
CORC cable

Which one is the best?

Engineering current density



Engineering current density

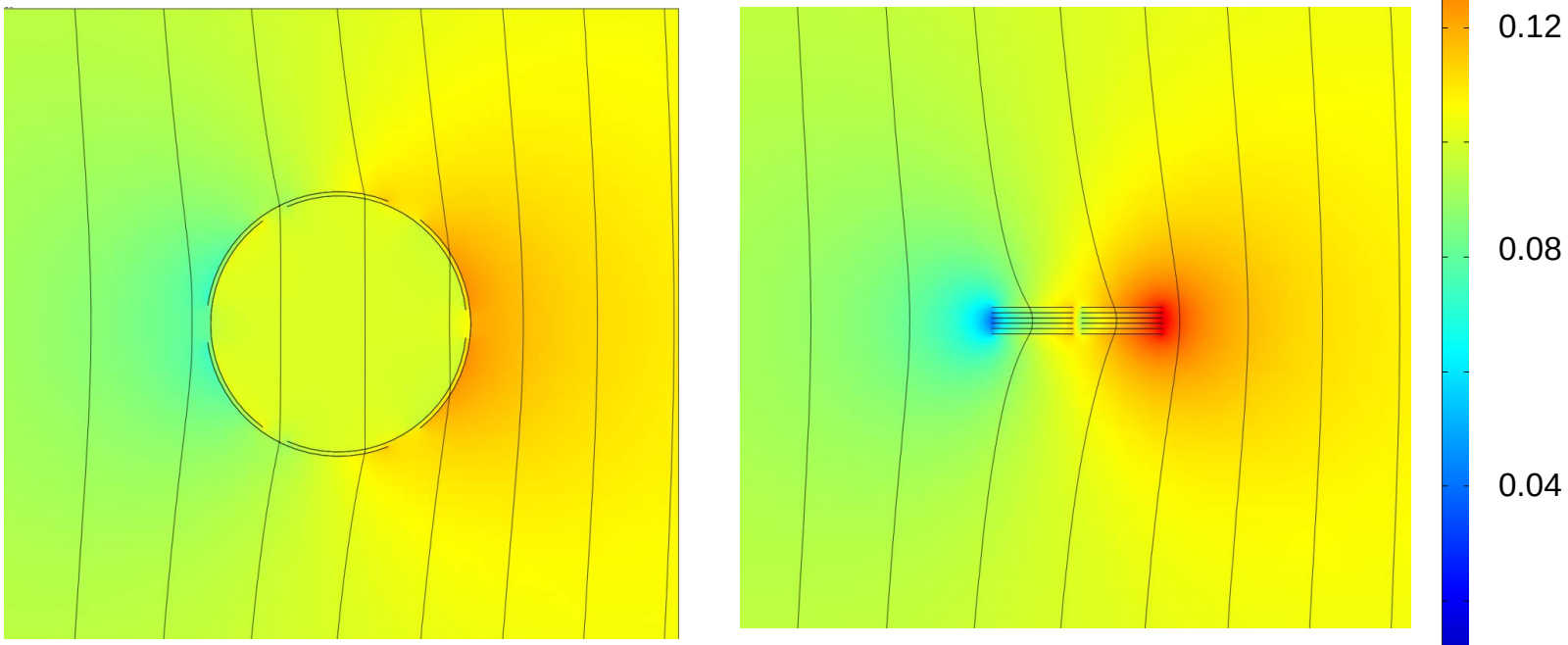


In-field performance

77 K, 100 mT

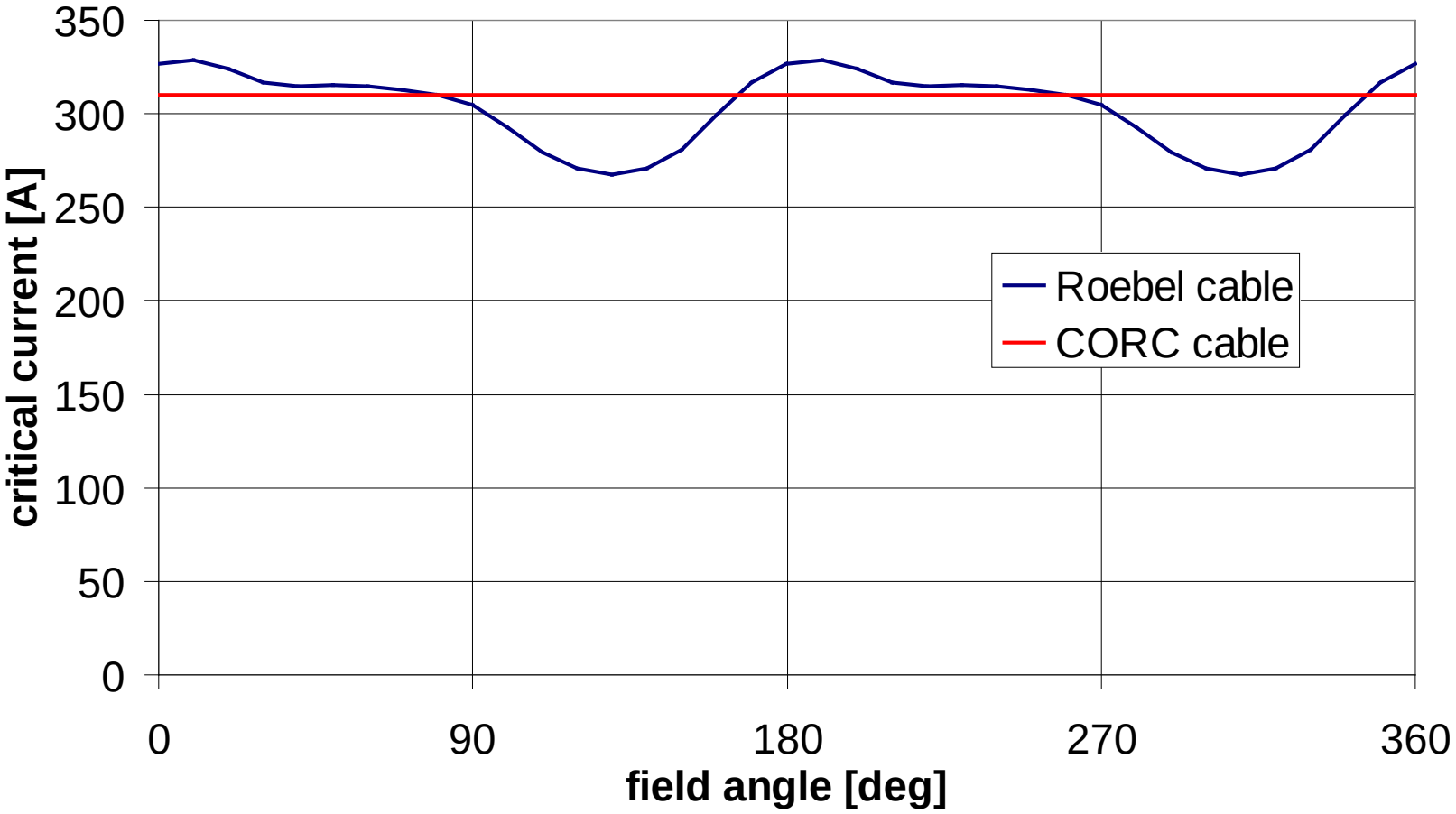
CORC cable

Roebel cable



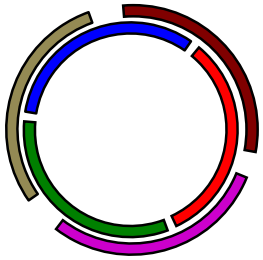
In-field performance

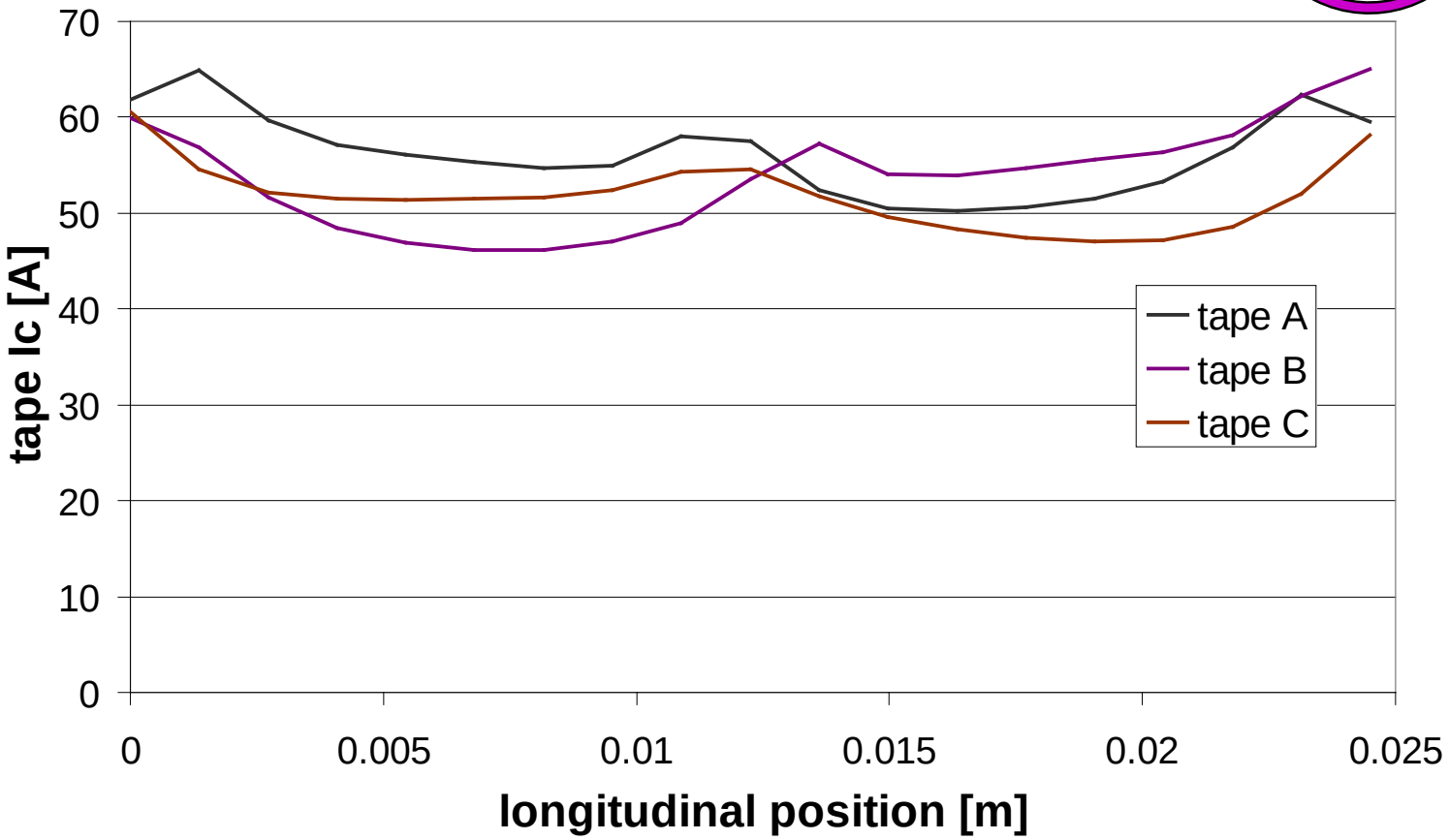
77 K, 100 mT



In-field performance

77 K, 100 mT

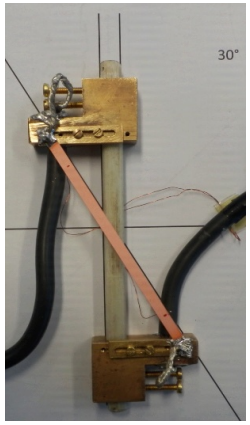


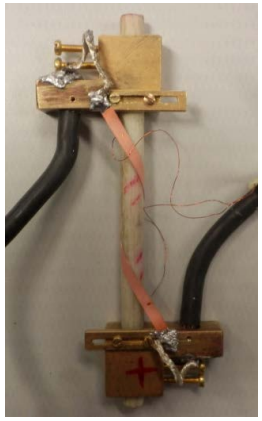


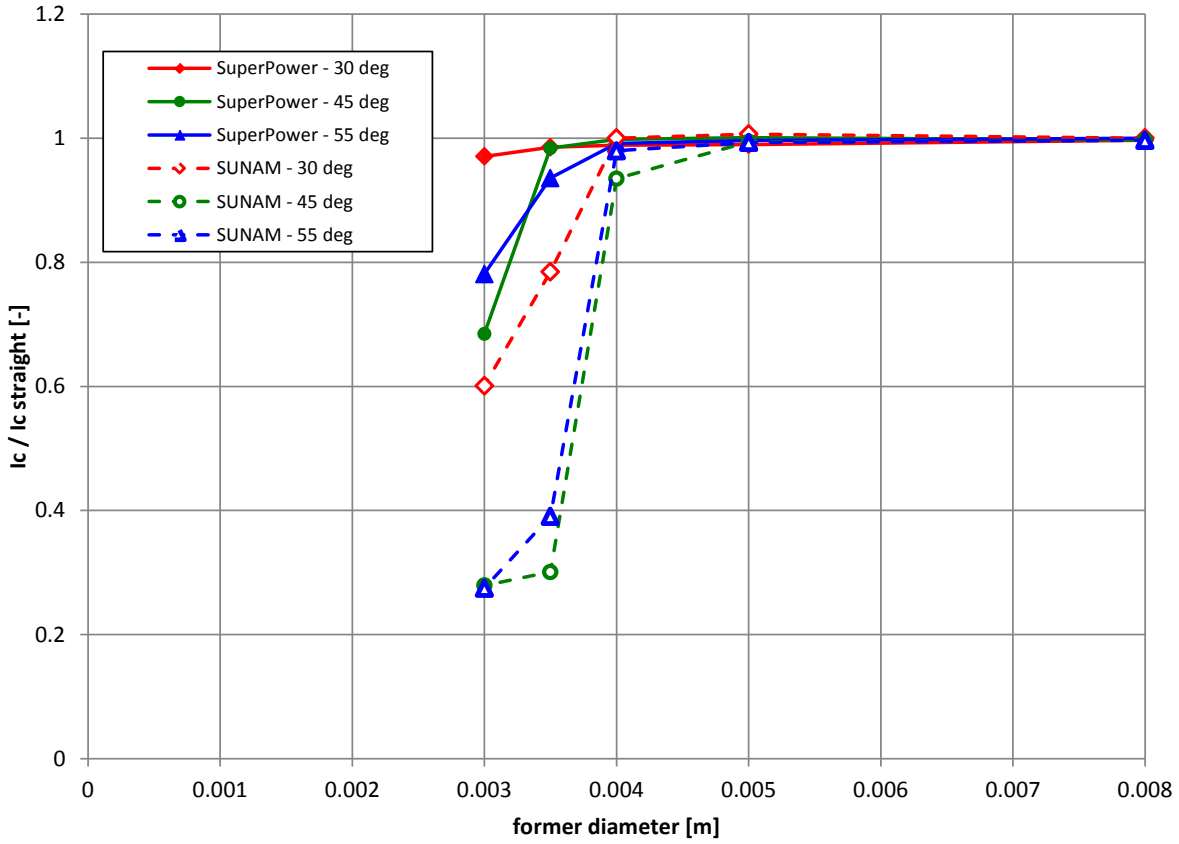
Tape resistance against mechanical stress

Increase of J_e – reduce former diameter

Different layers - different lay angle







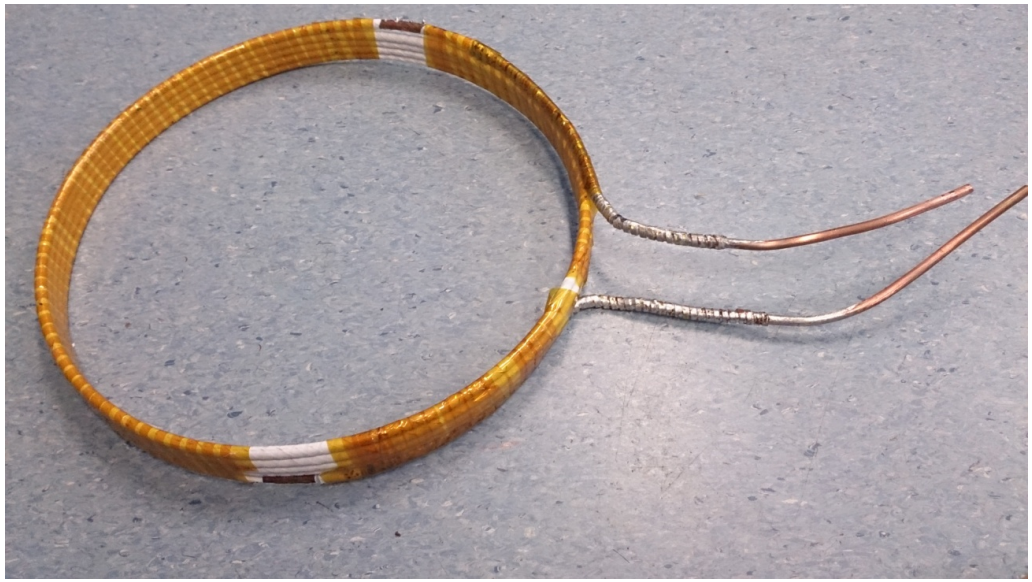
CORC cable – 2 tapes, SuperPower, core diameter 3.5 mm

CORC cable SuNam tape – 4 tapes

Core – copper tube, 6 mm outer diameter

Length – 5 m

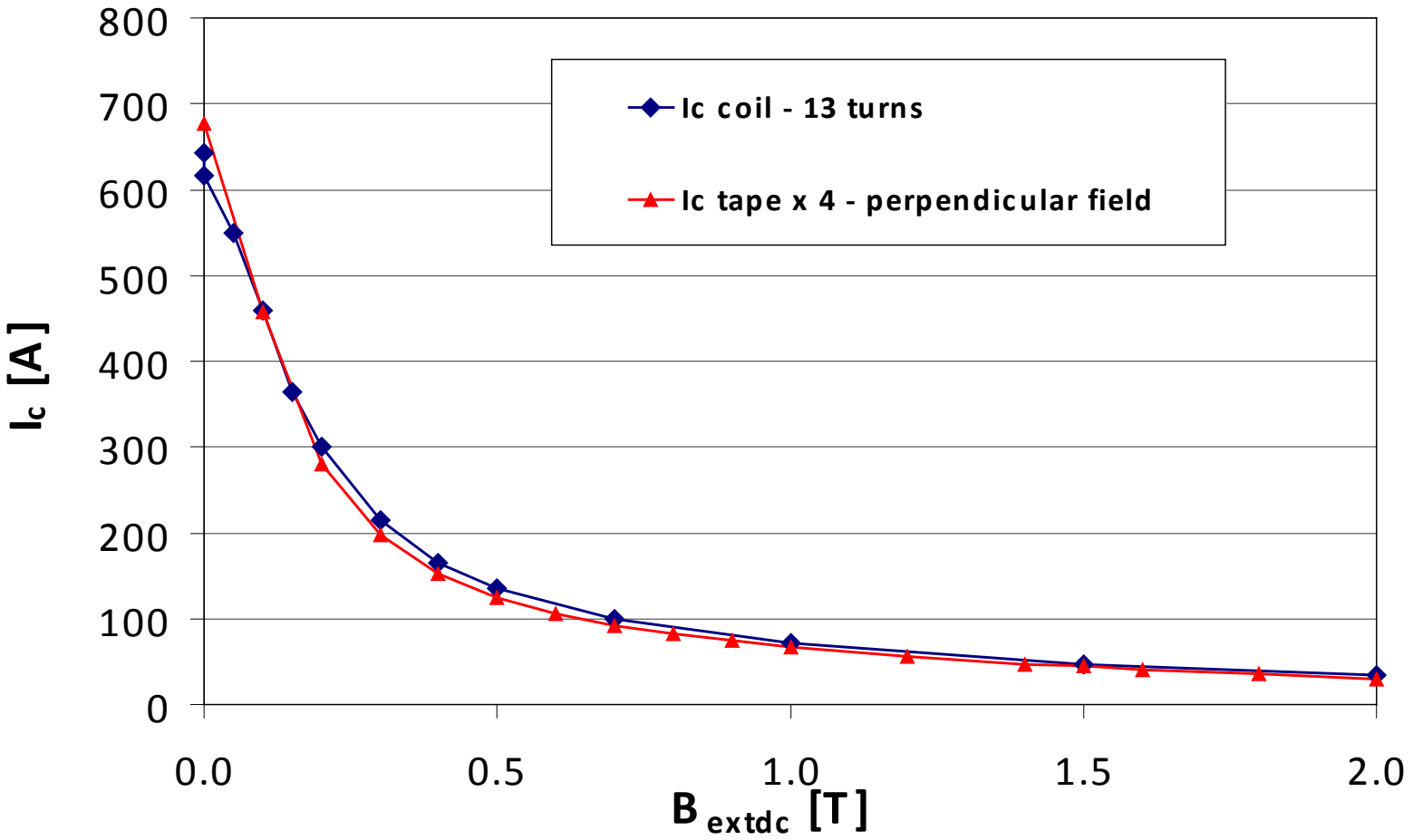
Internal cooling – flow of nitrogen



Coil – 5 turns, diameter 33 cm

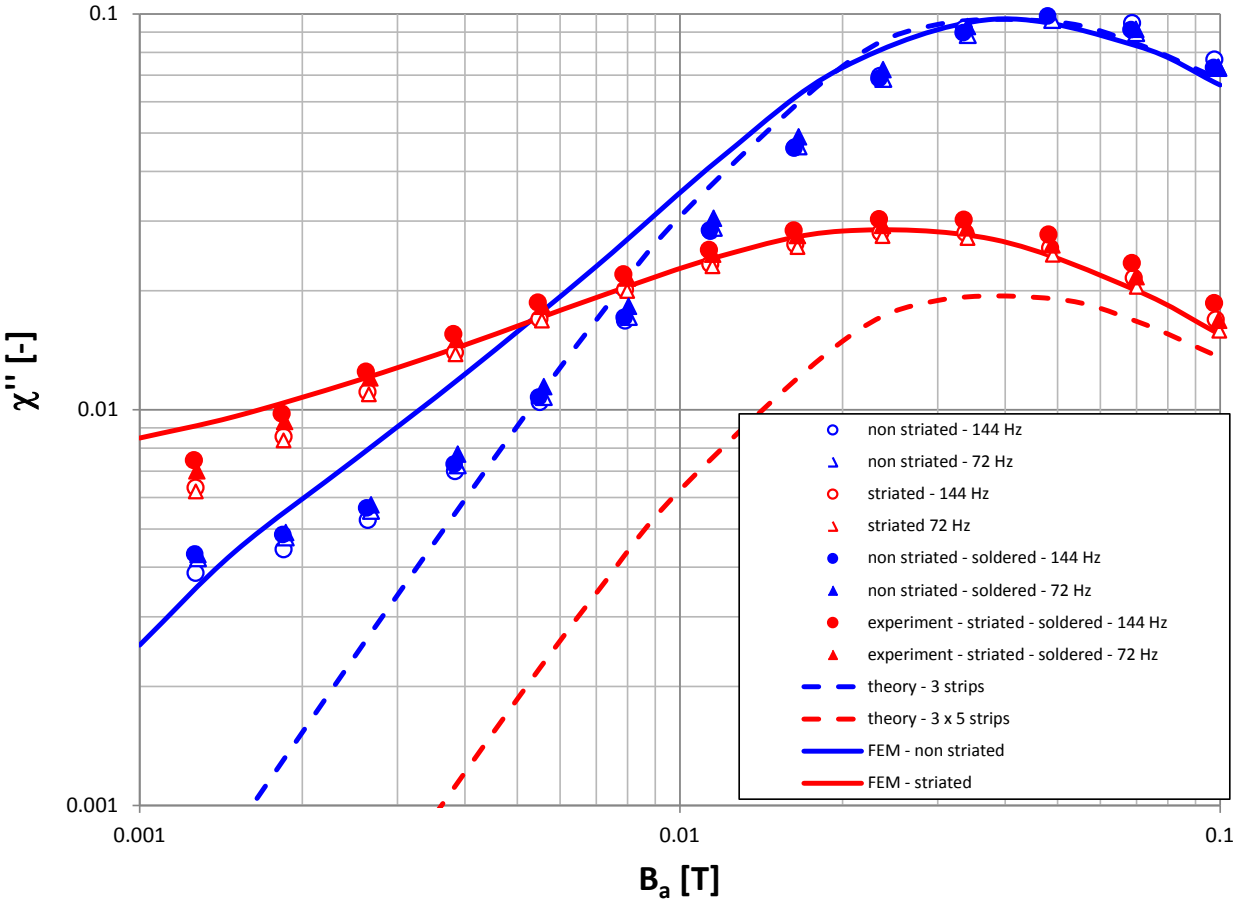
13 turns, diameter 11 cm

CORC cable SuNam tape – 4 tapes



Low AC loss cable – CORC with striations

- full transposition of filaments



CORC cable - summary

- low engineering current density

- scalability to high currents

- short twist length

- isotropic properties (only on long length)

- low AC loss

Question:

Which cable is the best?

Answer:

For which application?

CORC cable is good choice for

AC applications

with

high currents