Summary of the 2nd Session
Power Sources
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As pointed out already one year ago during the previous ESLS work shop, we are presently in a transition period where new power sources could progressively replace the usual klystron technology at 500 and 350 MHz. In the synchrotron light source community IOT and solid state based amplifier are therefore considered for the new projects and upgrades.

The most ambitious project is certainly the four 200kW Solid State Amplifier modules planned by SOLEIL for the storage ring cavities. The hardware development is progressing rapidly, and the first power combiner prototypes are ready to be tested. The production uncertainties of the power transistor amplifier have been relaxed identifying as second possible candidate for the basic 300W module. During the meeting some questions have been addressed concerning the power combining scheme, which doesn't include any circulator, except the low power circulators protecting each 300W module. In particular the risk of destroying a relevant number of modules should not be excluded in case of break down at high power. The ideal reciprocity of the combining circuits could maybe not apply perfectly for some uncontrollable reasons such as secondary arcs.

The IOT option appears straighter forward, although a combination of few tubes (presently limited at 80kW) is necessary to reach the desired power. The combining cavity scheme appears in this context quite attractive and flexible in comparison to the more classical hybrid T. The 3D simulations made at Daresbury suggest that such approach can be quite efficient in case of failure of one unit, provided some precautions like a symmetric regular spacing of the couplers around the cavity.

At SRS the old klystron HV power supply has been successfully replaced with a Pulsed Step Modulation (PSM) power supply from Thales. According to the analysis presented by the Australian Synchrotron at this work shop, this technology seems to be the most reliable choice for klystrons and IOTs applications. The old SRS HV power supply will be refurbished and used to build a 1.34 GHz plant for the ERL Project and a 500 MHz RF test stand. This new facilities could be used to support the development of new RF components within the light source community.