



R3: Searches for dark matter in underground experiments ~ Activity of R3 ~

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International Symposium of JSPS Core-to-Core program “DMNet”

24-25 March 2021, Online



素粒子宇宙起源研究機構



Overview of R3: DM searches in underground

Directional Search

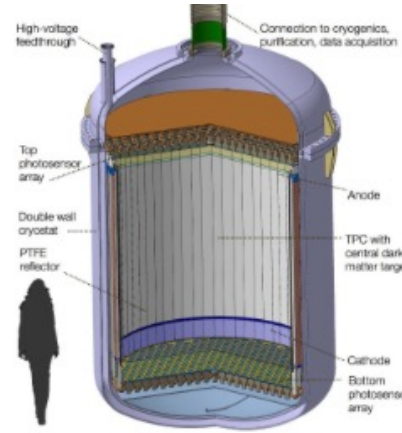


NEWSdm

Direct detection

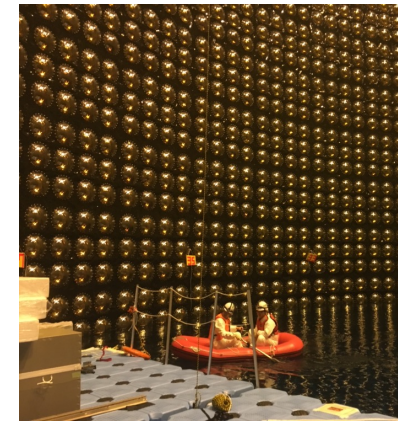


XENONnT

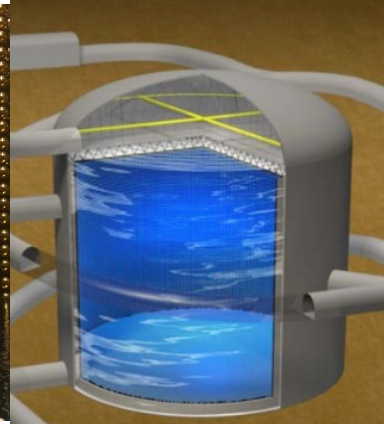


DARWIN

Indirect detection



Super-K

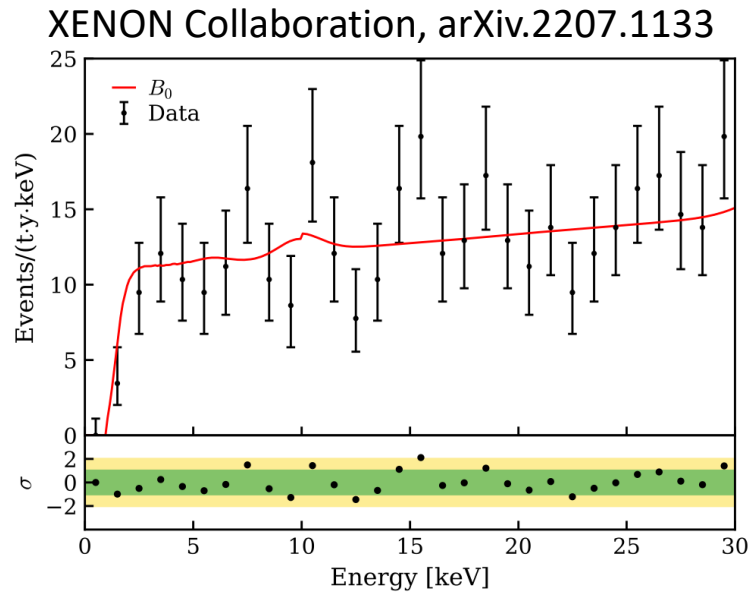


Hyper-K





XENONnT started science data taking, first result now announced (XENON1T lowE excess)



➔ 14th & 15th Sep in the Symposium
Manfred Lindner
Teresa Marrodán Undagoitia

DM supports long-term stay at LNGS
K.Miuchi, K.Miuzukoshi (Nov 2020)
M.Kobayashi (Apr-Jun, 2021)
Kai-Bui (Jul-Aug, 2022)

DMnet supports many trips from Japan to carry out the experiments even during COVID



Now re-accelerating activities for “post-”COVID !

nVETO system by Gd-Water Cherenkov

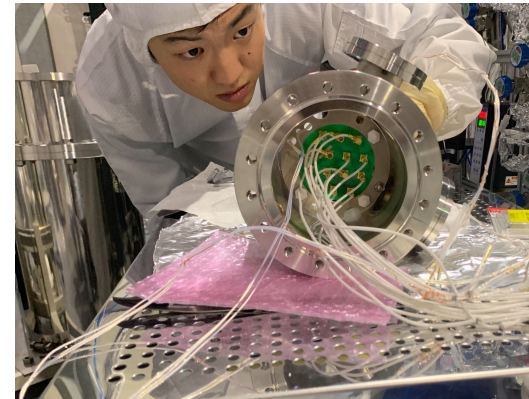




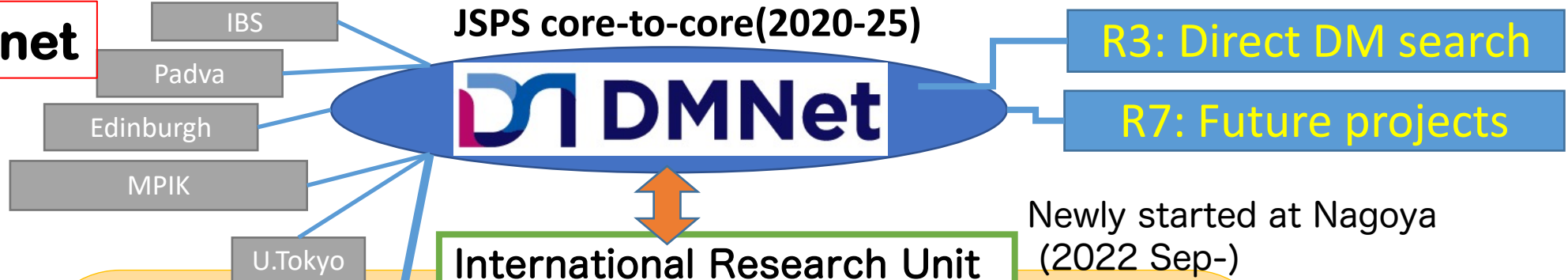
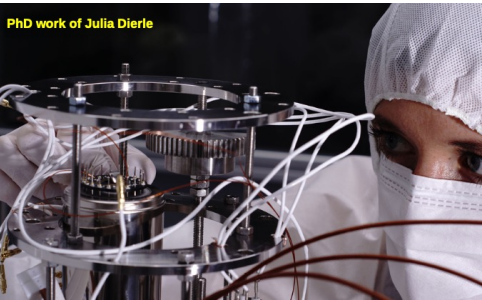
Many R&D activities toward future direct DM searches

- On-going activities to develop new idea of TPC, future photo-sensors, etc...
- **Breaking News: XENON-DARWIN-LZ (XDLZ) is being formed**
 - Consortium for future XeDM exp.
 - **1st kick-off meeting at KIT, 27-29, June, 2022**
 - **Whitepaper: arXiv:2203.02309**
- **And directional DM searches (NEWSdm, NEWAGE...)**

➔ 15th Sep in this Symposium
M.Schumann,
S.Kazama, H.Simgen
K.Miuchi, T.Naka



To reinforce DMnet



**International Research Unit
for innovative DM Search**

Newly started at Nagoya
(2022 Sep-)


M.Schumann


MoU

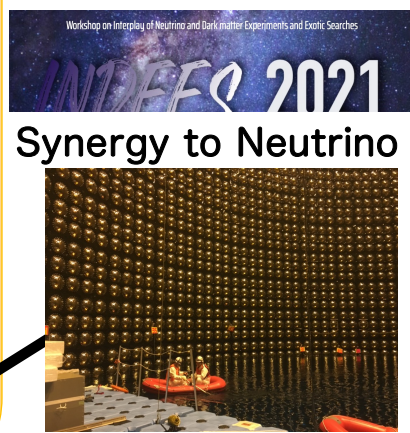

**XENONnT
DARWIN**




Hisano
 Interna
tional
Assist.
Prof

Kazama

Itow

- ① LqXe technology R&D
- Hermetic TPC
 - New photo-sensors
 - Scale-up strategy (50t LXe)

- ② Direct DM search
- XENONnT data analysis
 - Data analysis center
 - Various DM searches

- ③ Workshops
- Theory-experiment synergy
 - DM-Neutrino synergy
 - LXe technology