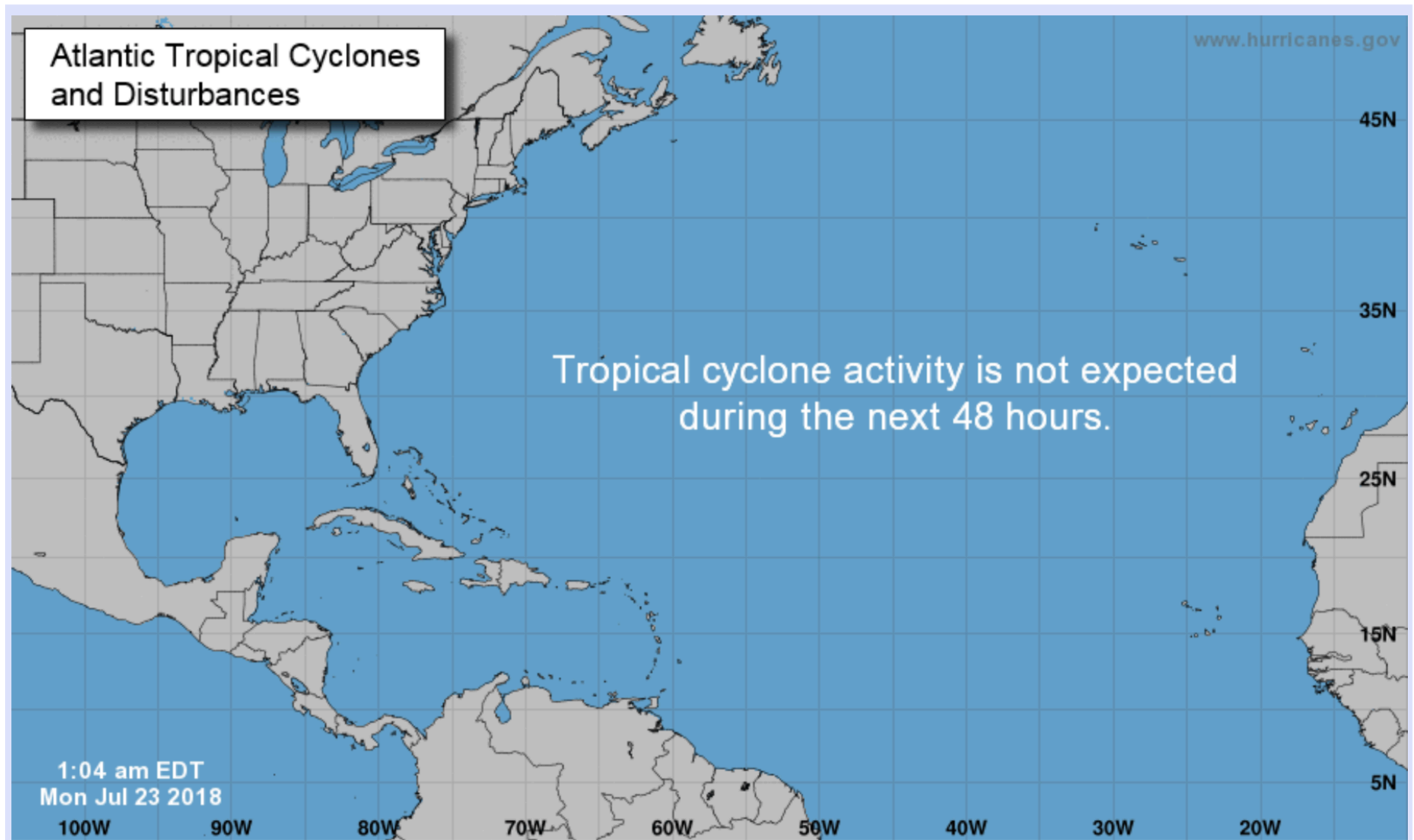


WELCOME



to IDM2018 @ Brown

As Bizarre as the weather has been at the start of this week ...



As Bizarre as the weather has been this week

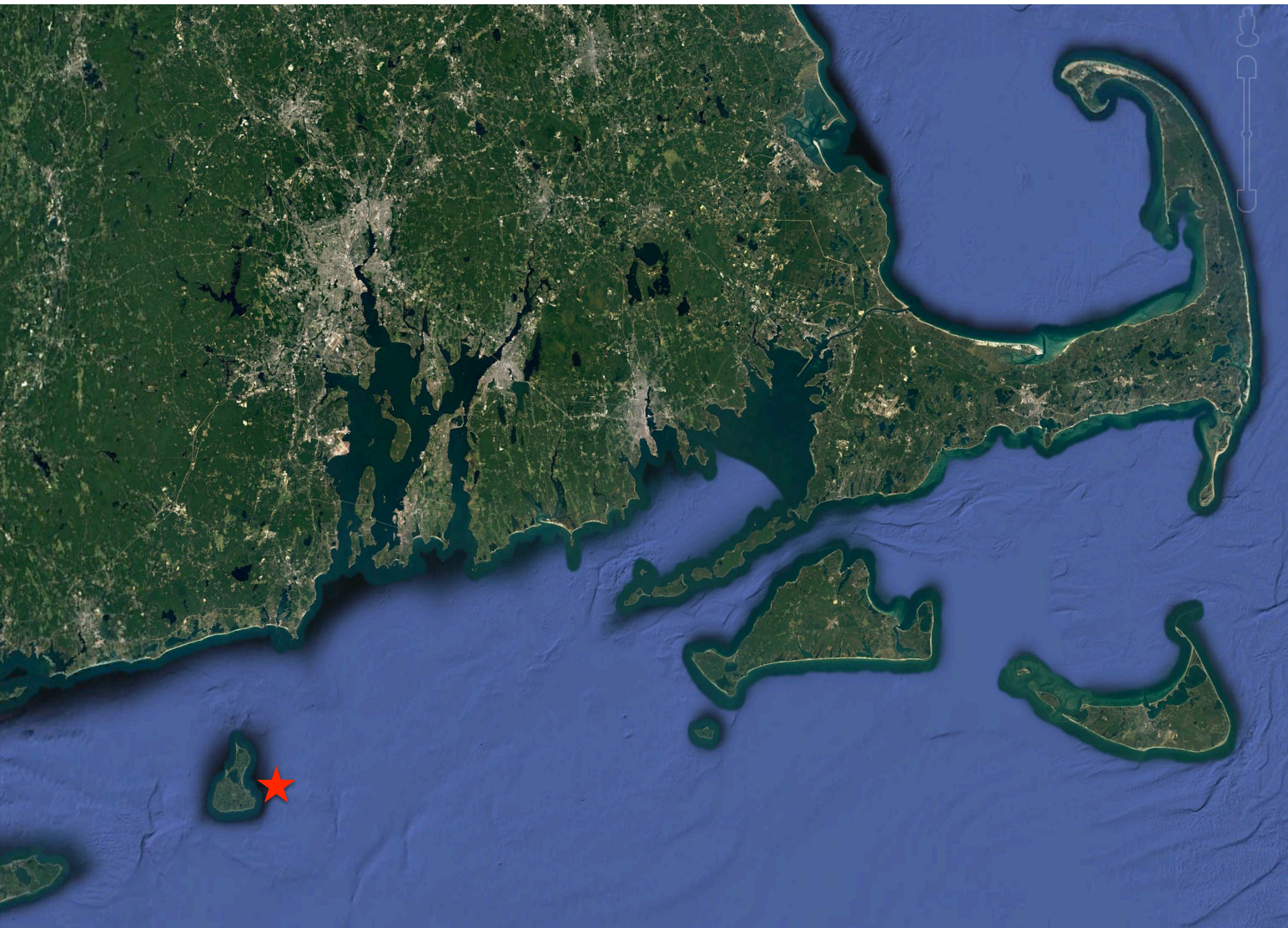
The Atlantic is currently free of hurricanes

I would recommend subscribing to our conference twitter feed

@IDM2018Brown

to ensure that should this change you will be the first to know





Rhode Island: Block Island Wind Farm

First Offshore Wind Farm in USA





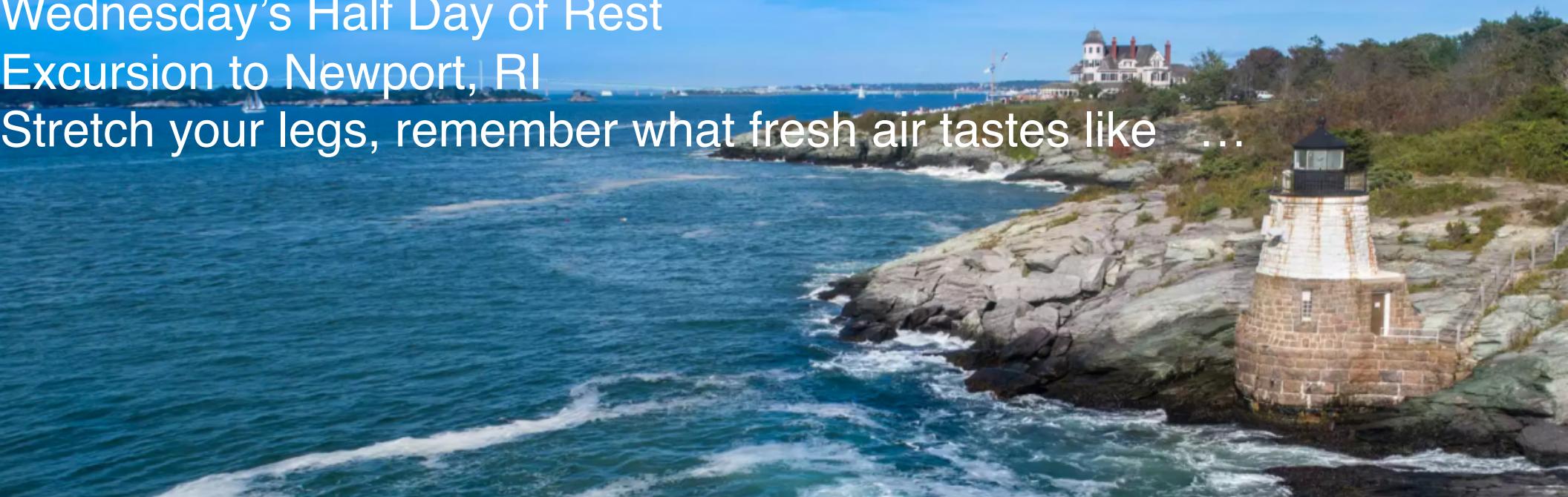




Wednesday's Half Day of Rest
Excursion to Newport, RI
Stretch your legs, remember what fresh air tastes like ...



Wednesday's Half Day of Rest
Excursion to Newport, RI
Stretch your legs, remember what fresh air tastes like ...



Brown University Foundation

The origin of Brown University can be dated to 1761, when three residents of Newport, Rhode Island drafted a petition to the General Assembly of the colony:

Your Petitioners propose to open a literary institution or School for instructing young Gentlemen in the Languages, Mathematics, Geography & History, & such other branches of Knowledge as shall be desired. That for this End ... it will be necessary ... to erect a public Building or Buildings for the boarding of the youth & the Residence of the Professors.

In September 1764, the inaugural meeting of the College Corporation was held at Newport.

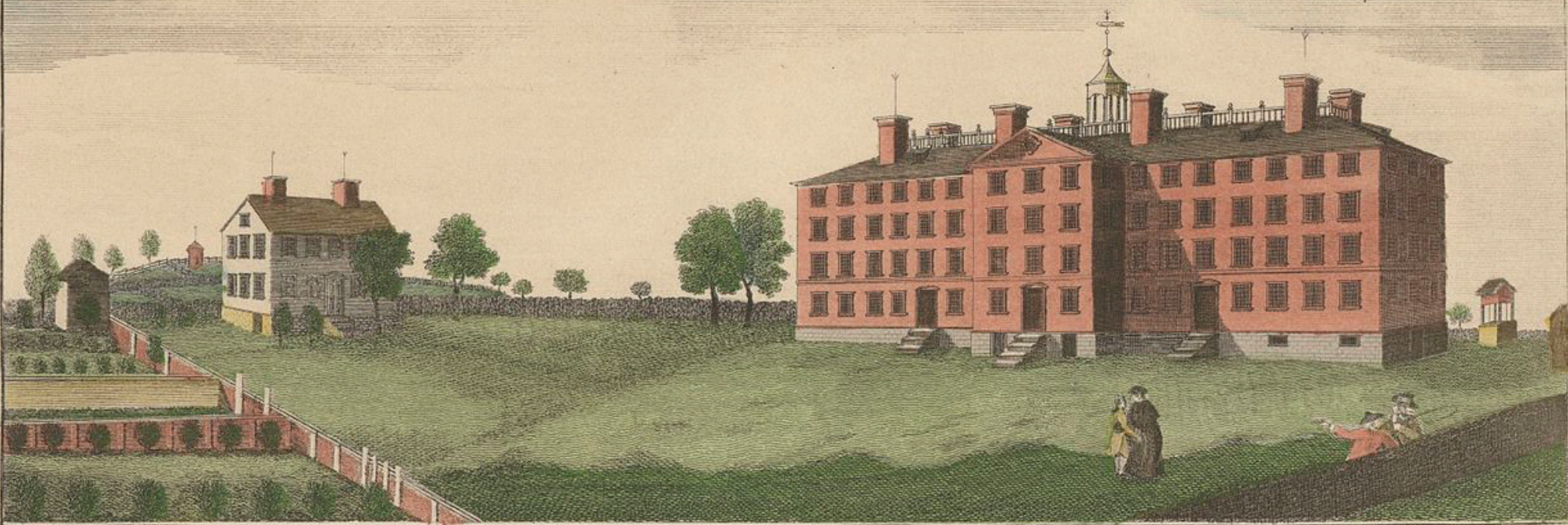
The Charter was not the grant of King George III, as is sometimes supposed, but rather an Act of the colonial General Assembly.

In two particulars, the Charter may be said to be a uniquely progressive document. First, other colleges had curricular strictures against opposing doctrines, while Brown's Charter asserted, **"Sectarian differences of opinions, shall not make any Part of the Public and Classical Instruction."** Second, according to Brown University historian Walter Bronson, **"the instrument governing Brown University recognized more broadly and fundamentally than any other the principle of denominational cooperation."**

In 1770, the College moved from Warren, Rhode Island to the crest of College Hill overlooking Providence.

Nicholas Brown, his son Nicholas Brown, Jr. (class of 1786), John Brown, Joseph Brown, and Moses Brown were all instrumental in moving the College to Providence and securing its endowment.

Joseph became a professor of natural philosophy at the College; John served as its treasurer from 1775 to 1796; and Nicholas Junior succeeded his uncle as treasurer from 1796 to 1825.



Brown Department of Physics

Physics had a place in the curriculum in the earliest days of the College, when it was known as “natural philosophy”

Day-to-day experiences of Natural Philosophy can be gleaned from the diary of Solomon Drowne (side note - I live in an historic district named after the Drown family, referred to as Drownville)

Aug 3 1772 - Diary of Solomon Drowne

“This morning at about 8 the senior and junior classes go down to Mr. Brown’s apparatus at the works to attend electrical and Philosophycal lectures. Mr. Howell present.

In the forenoon and part of the afternoon try electrical experiments. Kill a pigeon, etc.

Then darken the room to construct the camera obscura which affords very pretty diversion as some go out and ride, play, etc. and David, later a Baptist clergyman and chaplain in the Revolutionary War` stands upon his head.

We then carry out the telescope and micrometer up on the hill and look at the sun as long as we could see him, then at the moon, then stars, and lastly the planet Jupiter, 3 of whose moons we see.”

The following day (Aug 4 1772)

“This morning at 8 we go again to the apparatus. In the first place we fill a globe with water which is hung up in a darkened room with only a hole in the window shutter to let a ray shine upon the globe, which after a refraction and reflection or two exhibits a rainbow; ...

... but our globe falls in the midst of the experiment, not being well suspended. Next we demonstrate the theory of light and colors with a very neat prism: Then we fix the camera obscura or solar microscope which magnifies objects amazingly.

A louse is made to appear six feet long in which we could plainly discern the peristaltic motion. Lastly we see water ascend in capillary tubes which concludes the experiments”

Brown Department of Physics

In 1869 Rowland Gibson Hazard and his son Rowland Hazard donated \$40,000, for a professorship which would benefit the university and concurred in the recommendation of President Caswell that the funds be used for the Hazard Professorship of Physics, to which Eli Whitney Blake was appointed.

Physics became a very popular study with the arrival in 1870 of both the well-liked Professor Blake and a Holtz Electrical Machine, from which, in a darkened room, the students observed with wonder the power of electricity.

Two members of Blake's first class, juniors John J. Holbrook 1872 and Edwin A. Herring 1872 were inspired by his lectures to install a telegraphic line between their rooms at opposite ends of University Hall.

In 1877 Blake Reported, "The Physical laboratory was thrown open to students this year." Thirteen students applied for the laboratory course, but only ten could be accommodated in two divisions. Blake regretted that during the first year so much time had to be devoted by these students to construction of apparatus, but observed that "the tangible results of their term's work remain as valuable additions to our means of instruction."

Brown Department of Physics

Wilson Hall was built in 1891 through the bequest of George Francis Wilson for the use of the Physics Department. (Wilson invented the machinery necessary to manufacture Horsford's Acid Phosphates and Rumford Baking Powder.)

A Romanesque style building of random ashlar sandstone with brownstone trim

You may admire it during the Lobster Boil on the College Green on Wednesday



Brown Department of Physics

The groundbreaking for the building had occurred on September 16, 1963, after over a year of controversy. Permission to close Manning Street was granted by the Providence City Council after opposition by East Side residents.

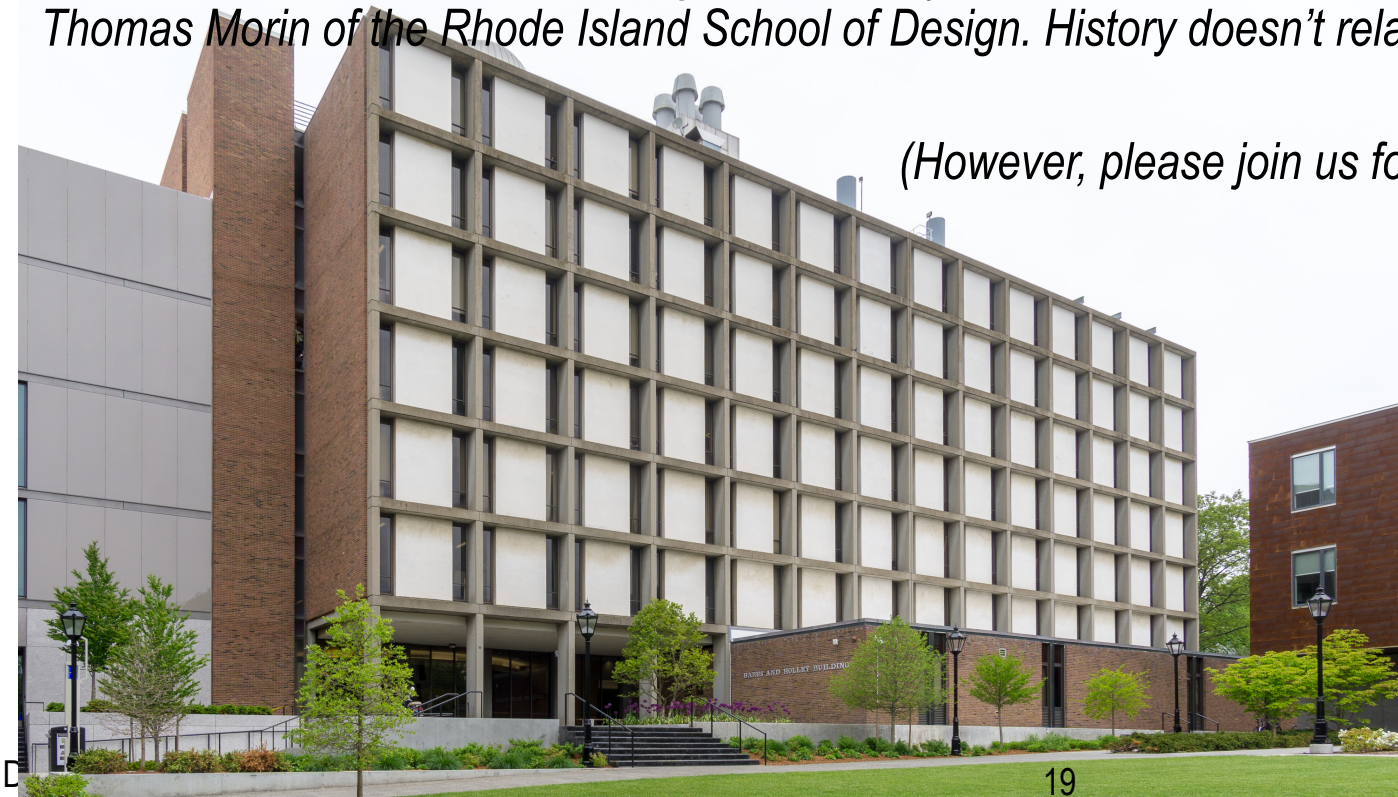
The ~~fourteen~~ seven-story building was designed by Sherwood, Mills and Smith of Stamford, and cost \$4.2M part of which was paid by the Advanced Research Projects Agency of the Department of Defense and the National Science Foundation.

The speaker at the dedication ceremony was noted astrophysicist Fred Hoyle.

You may admire it ... 1960's School of Prison Architecture

Included in the plan for the building was the forty-foot cast metal sculpture entitled "The Heraldic Arena," by Thomas Morin of the Rhode Island School of Design. History doesn't relate why it was never put in place.

(However, please join us for drinks in RISD Museum tonight)



Prof Leon Cooper

RESERVED
PARKING
NOBEL
LAUREATE

Violators subject to
fine or tow at owner's
risk and expense



Prof Michael Kosterlitz



RESERVED PARKING
NOBEL
LAUREATE

RESERVED PARKING
NOBEL
LAUREATE



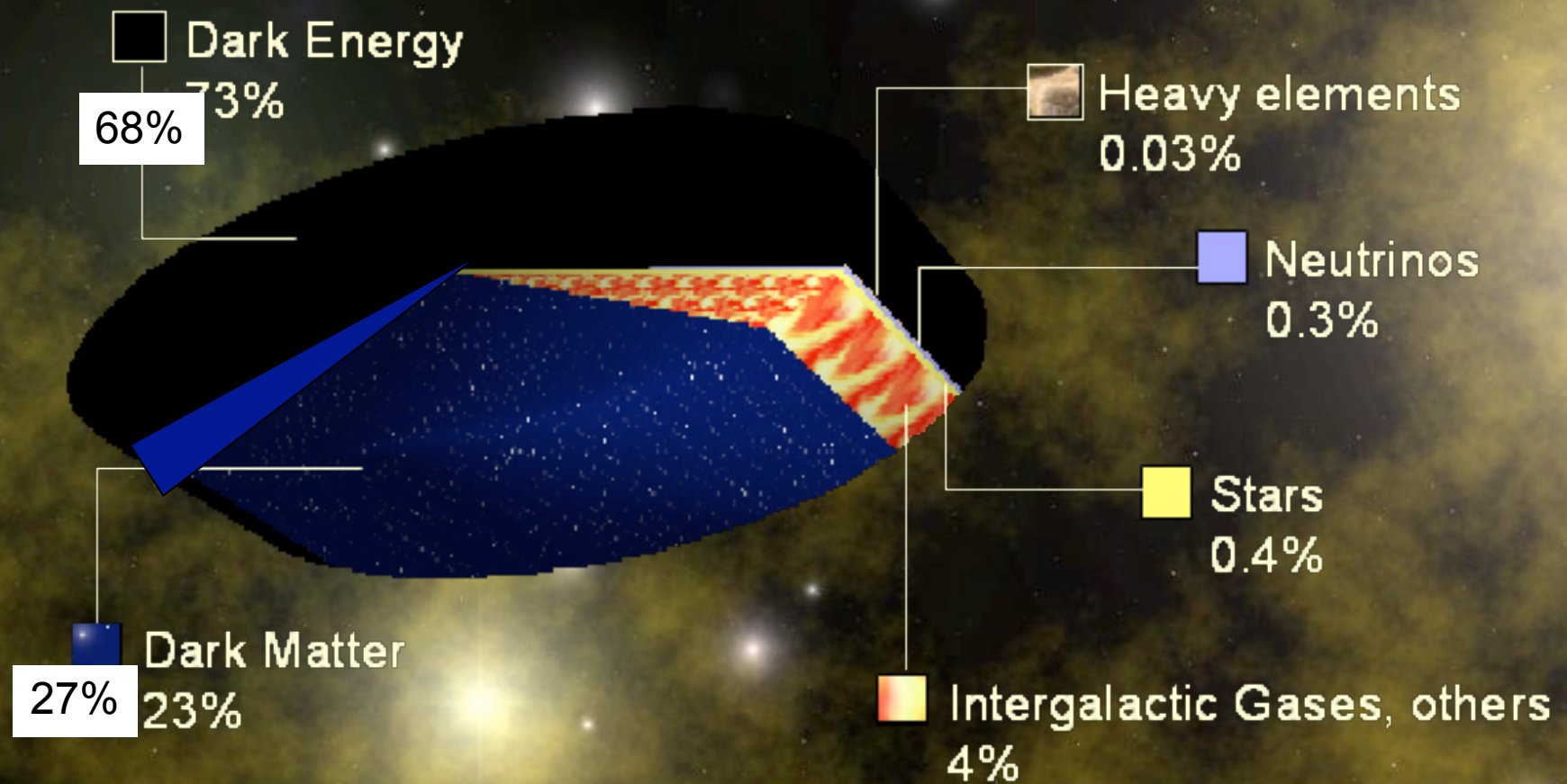
IDM Conference Series

2018	Brown @ Providence, USA
2016	Sheffield, UK
2014	Amsterdam, Netherlands
2012	Chicago, USA
2010	Montpellier, France
2008	Stockholm, Sweden
2006	Rhodes, Greece
2004	Edinburgh, UK
2002	York, UK
2000	York, UK
1998	Buxton, UK
1996	Sheffield, UK

Preface - Proceedings of 1st IDM 1996

“There can be little doubt now that 90-99% of the Universe comprises dark matter...”

What is the Universe made of ?



Preface - Proceedings of 1st IDM 1996

“... Thus the objective of this meeting was not to assess the evidence for the existence of dark matter but rather to assess critically the status of work trying to *identify* what the dark matter is.”

Identification of Dark Matter

2018	Brown @ Providence, USA
2016	Sheffield, UK
2014	Amsterdam, Netherlands
2012	Chicago, USA
2010	Montpellier, France
2008	Stockholm, Sweden
2006	Rhodes, Greece
2004	Edinburgh, UK
2002	York, UK
2000	York, UK
1998	Buxton, UK
1996	Sheffield, UK

Identification of Dark Matter

So let us focus on one of the most intriguing and toughest questions present at the start of the 21st Century.

What the *?!! is most of the mass of the Universe made of?

LUX-ZEPLIN (LZ) detector

7.0 T active LXe
5.6T fiducial

Instrumented Xe
skin detector

50 kV cathode
high voltage

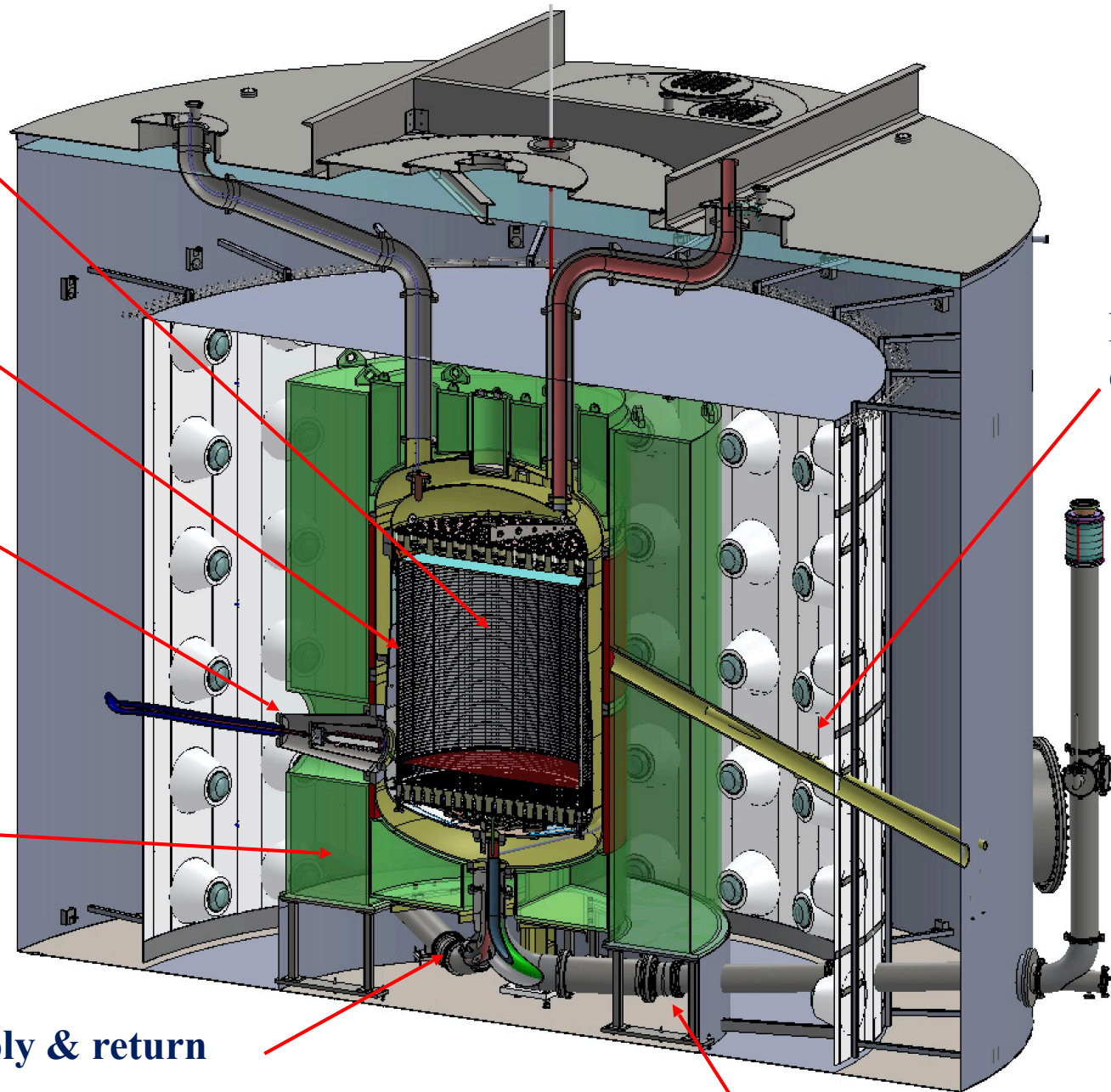
17 tonnes Gd-
LS Outer
Detector

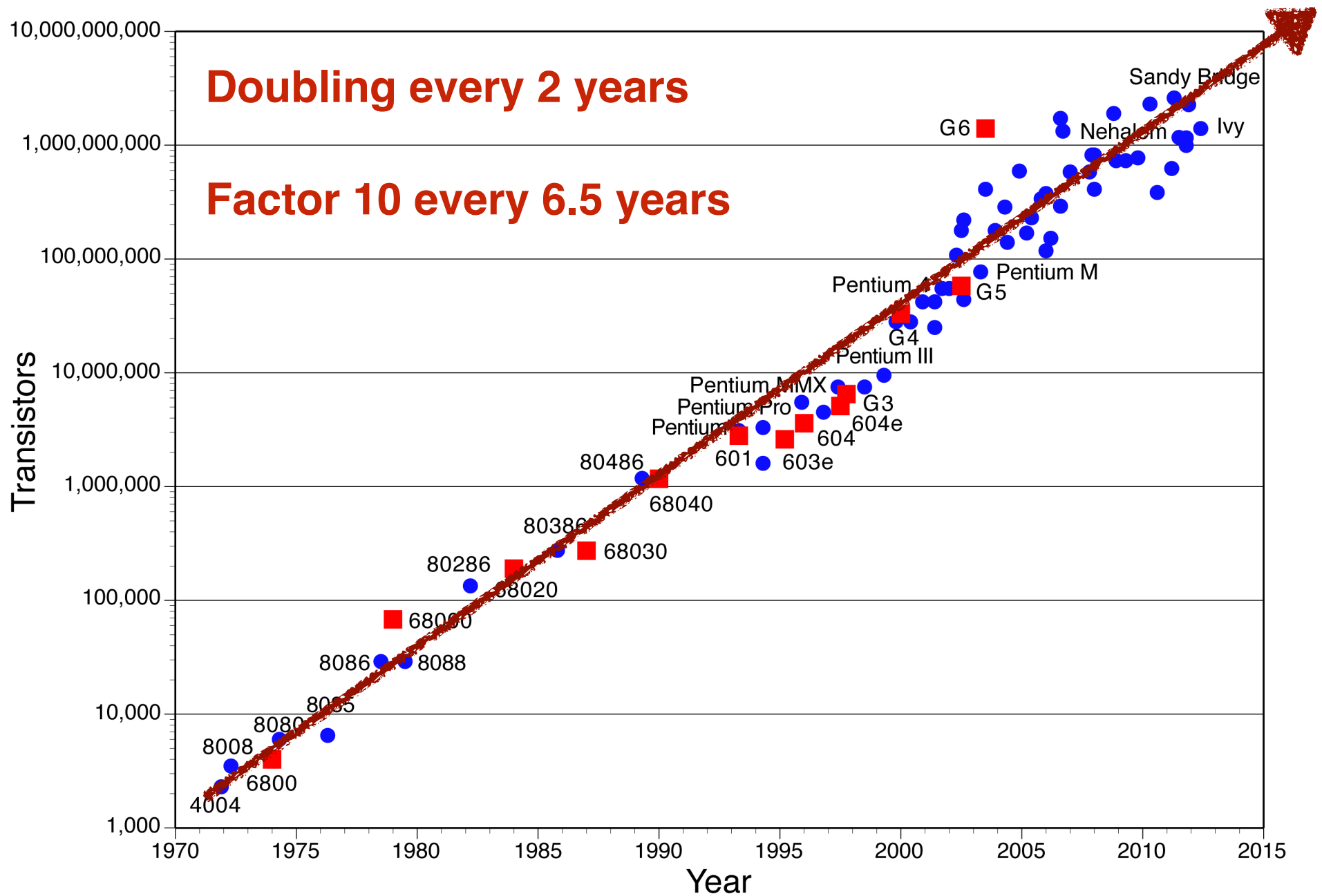
LXe supply & return

Neutron
conduit

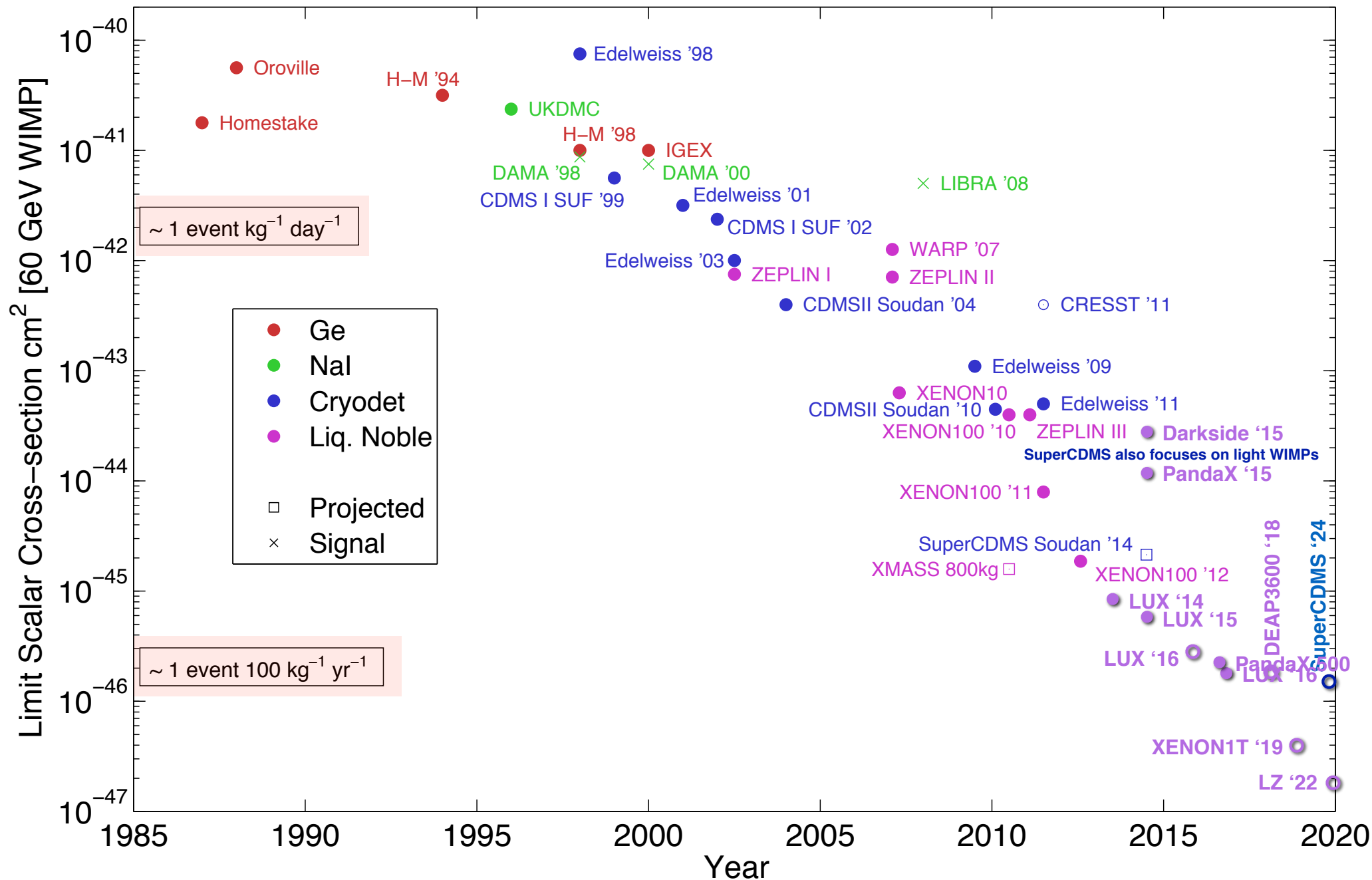
Lower PMT cable conduit

Technical Design Report, arXiv:1703.09144.

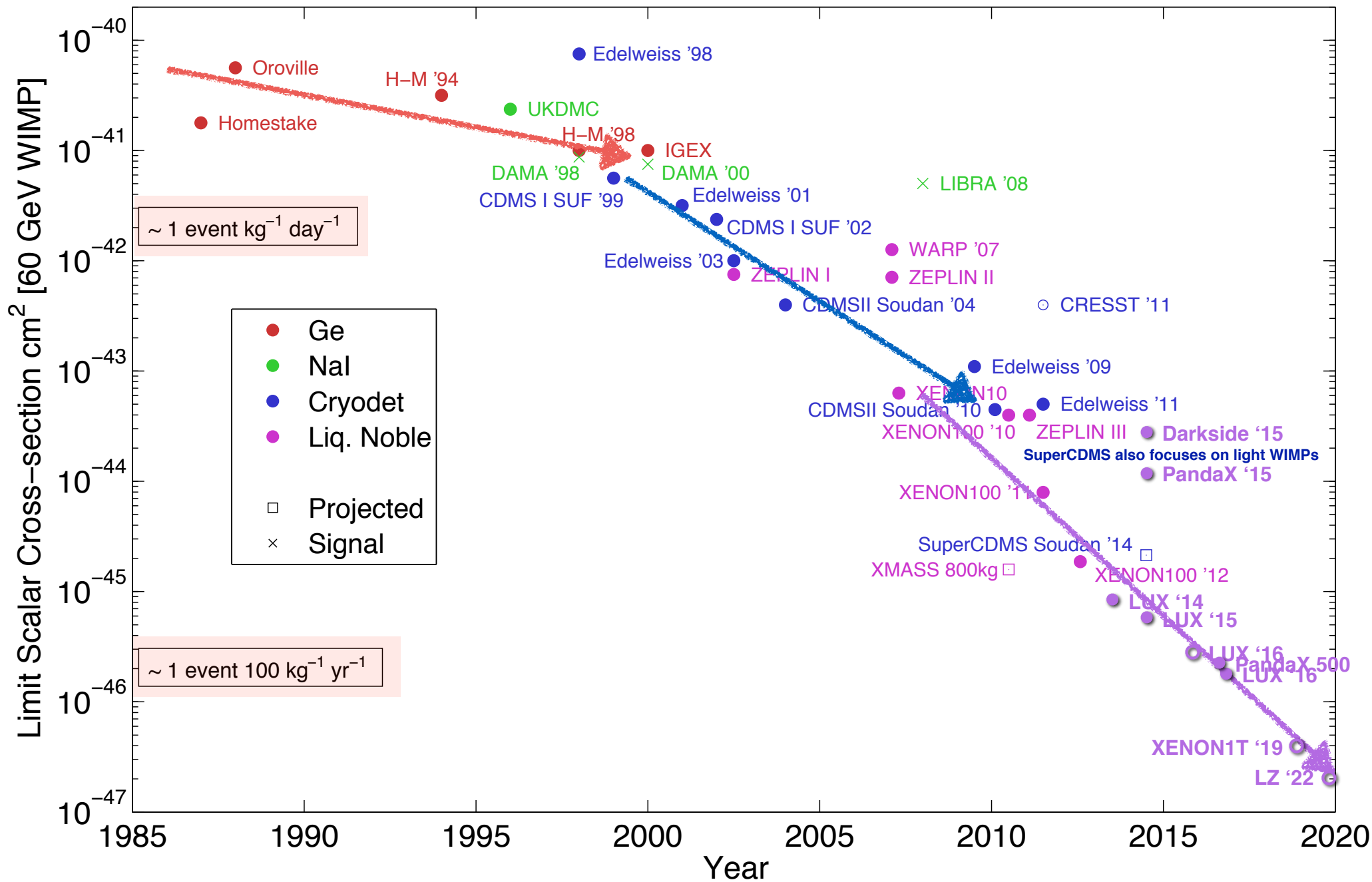


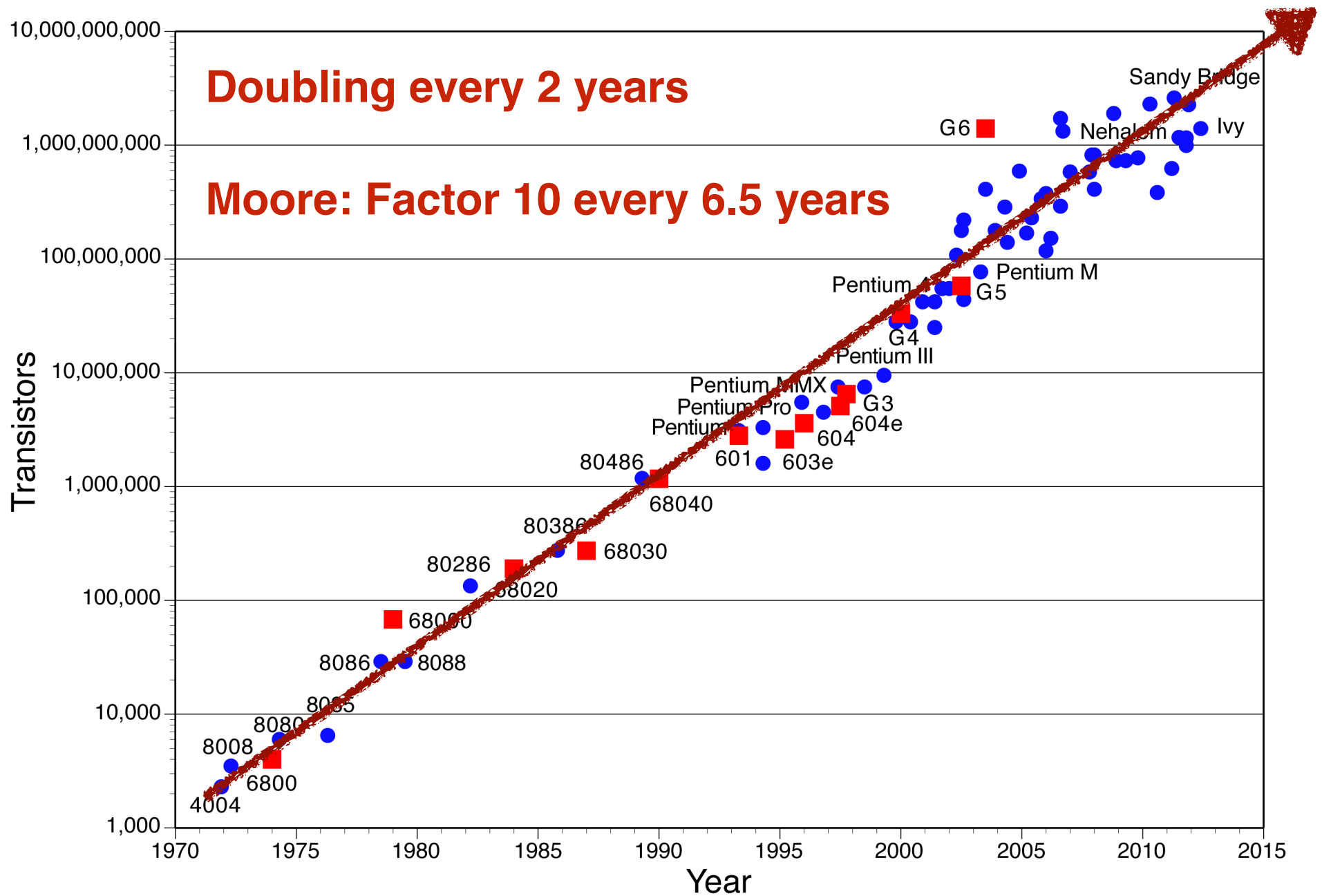


Dark Matter Searches: Past, Present & Future



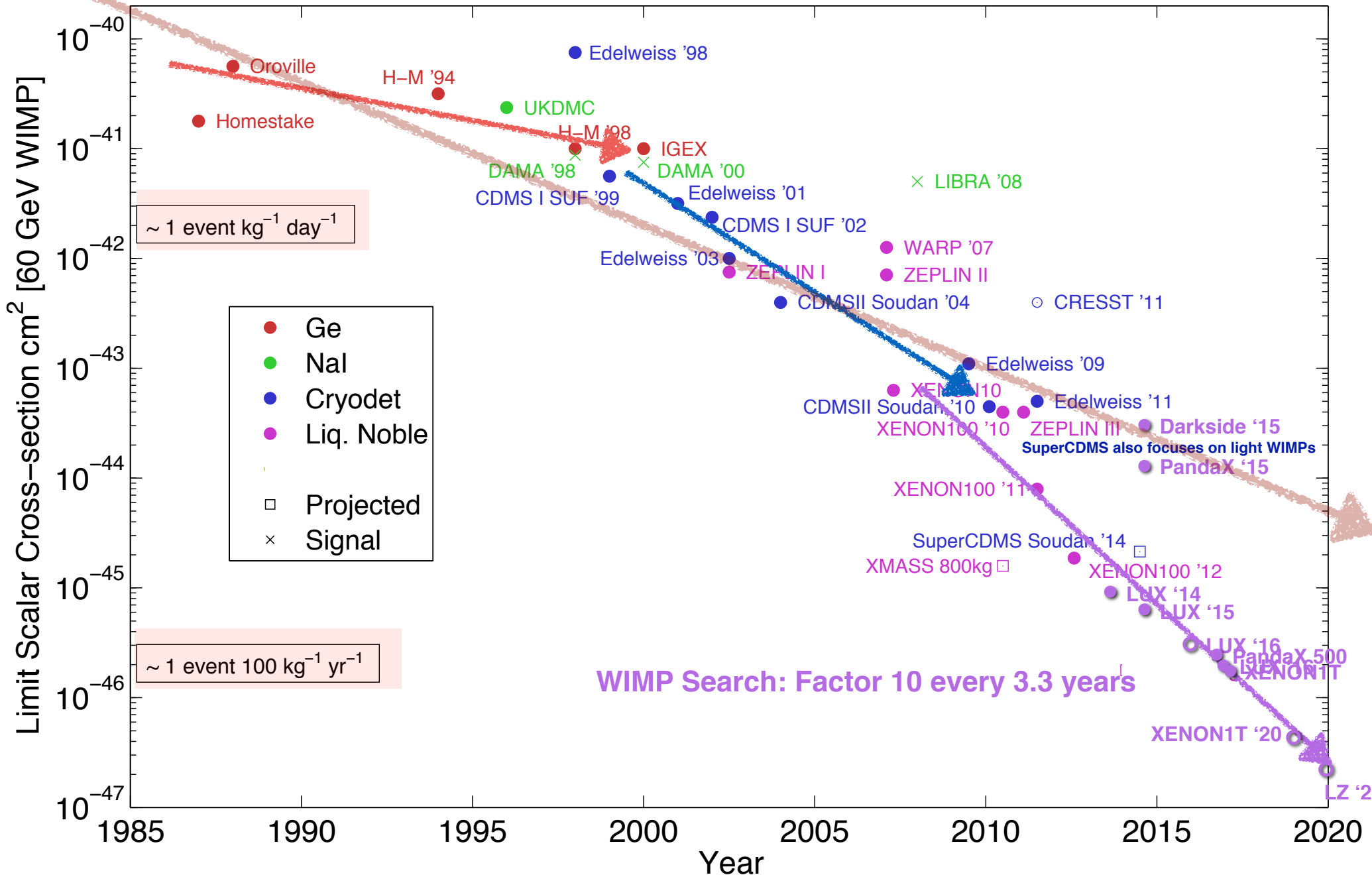
Dark Matter Searches: Past, Present & Future





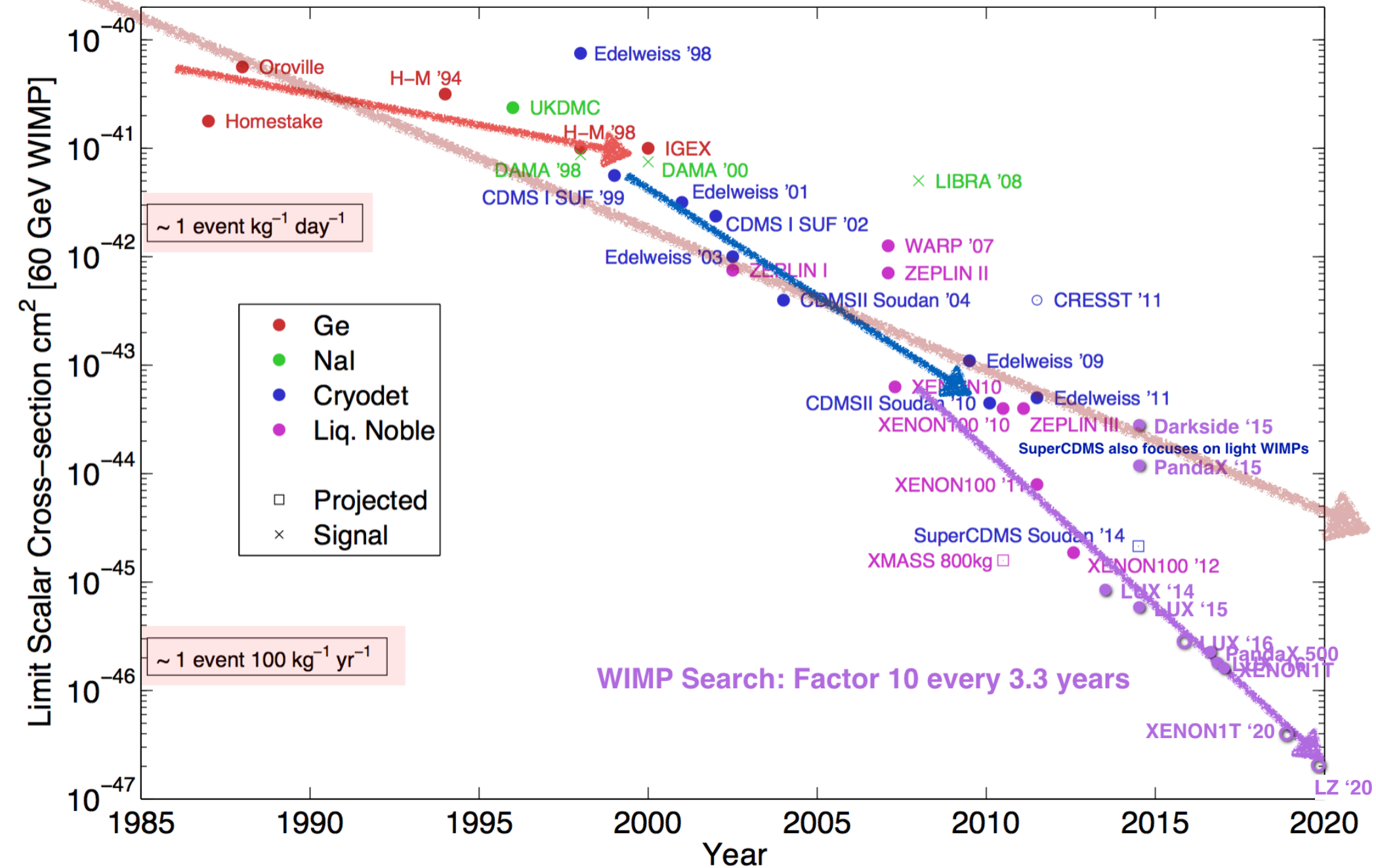
Moore: Factor 10 every 6.5 years

Dark Matter Searches: Past, Present & Future



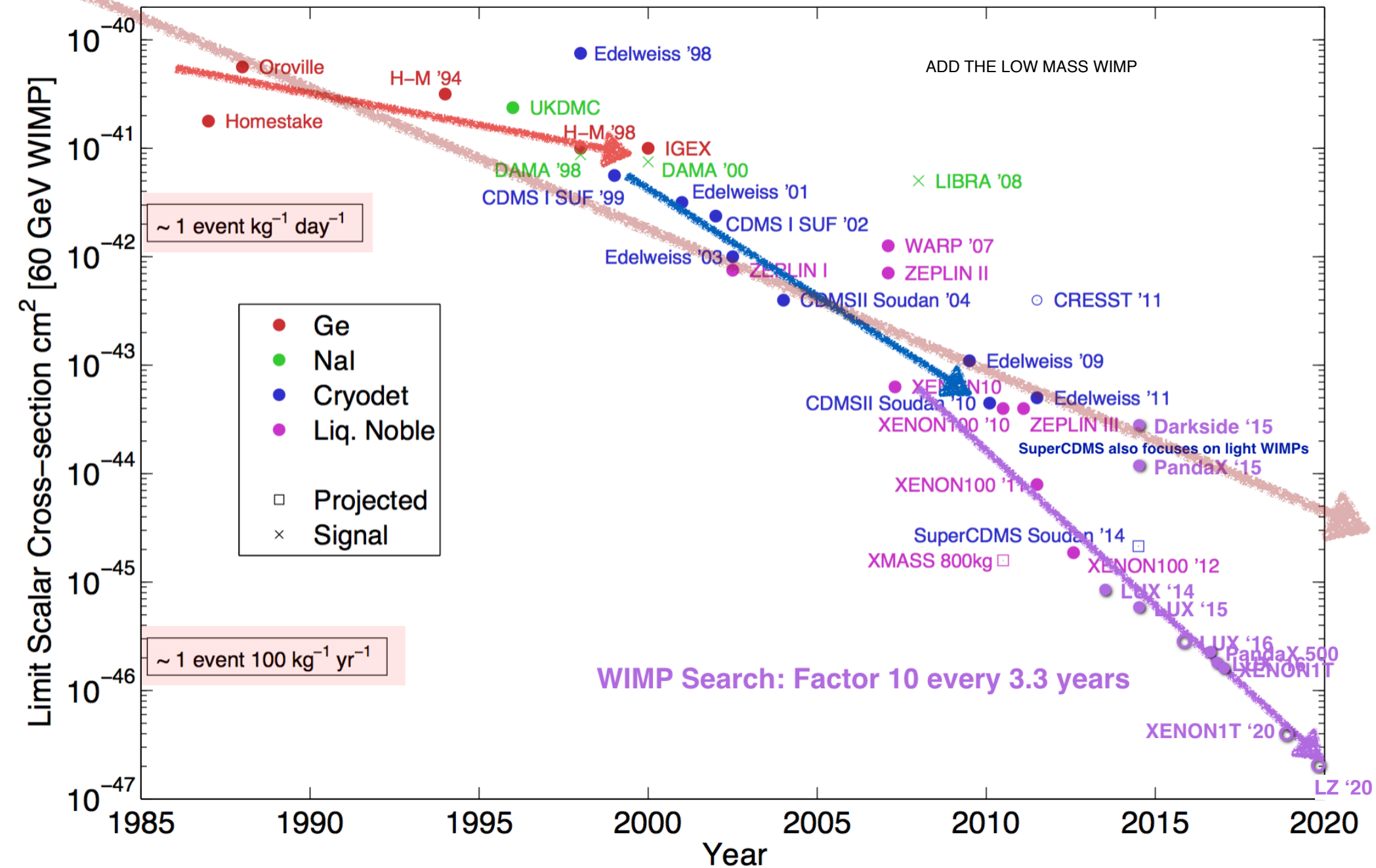
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Dark Matter Searches: Past, Present & Future



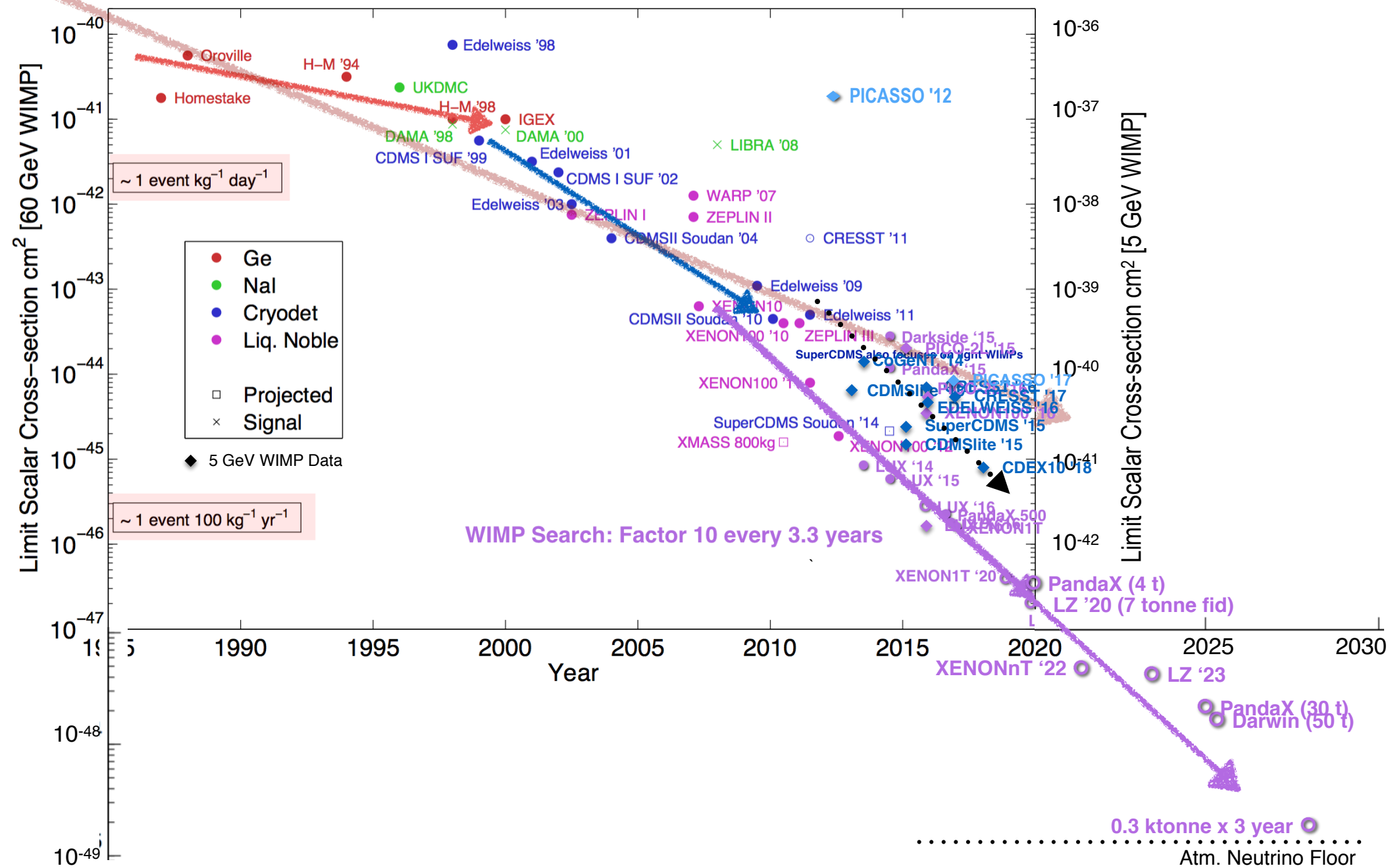
Moore: Factor 10 every 6.5 years

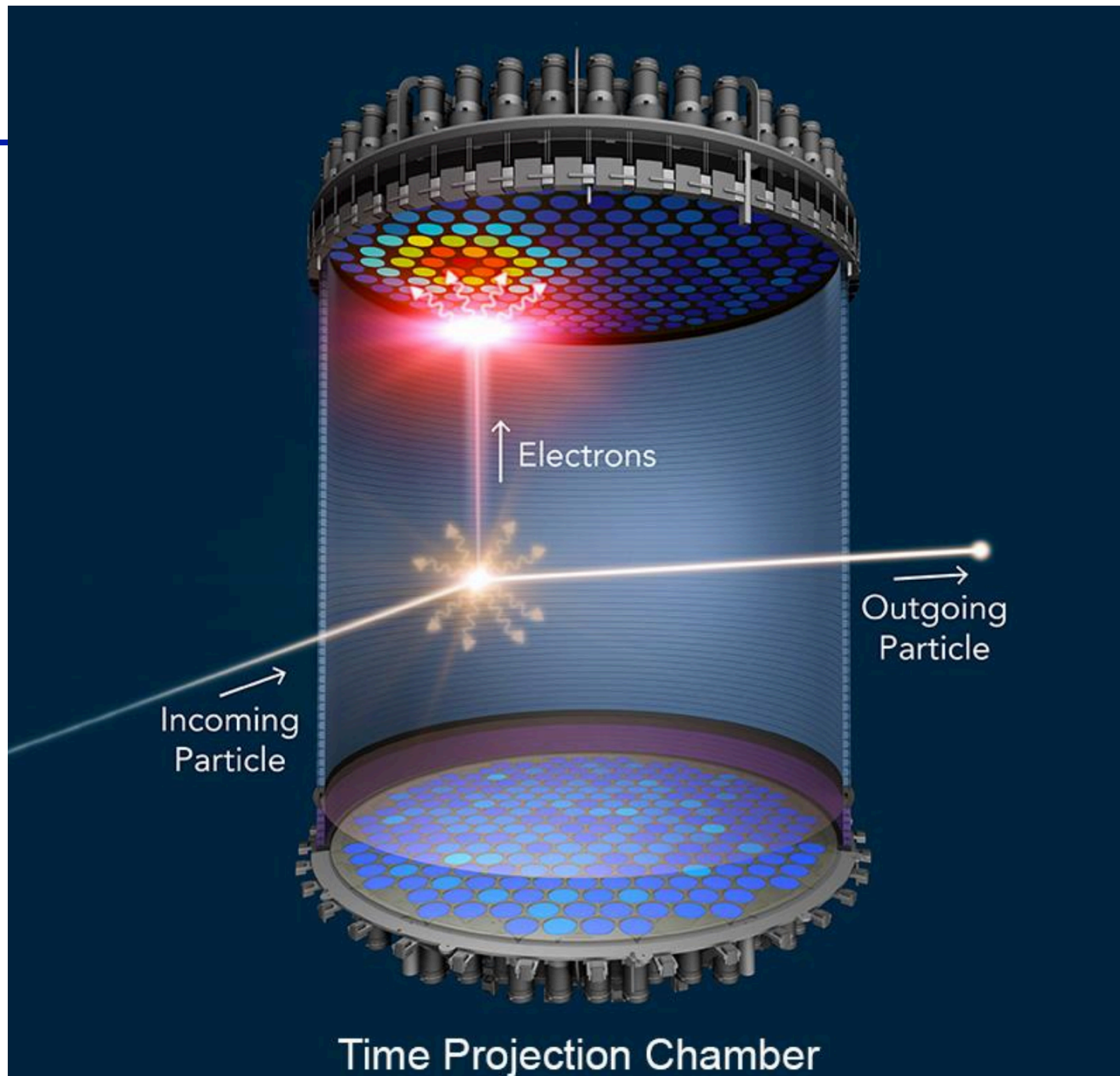
Dark Matter Searches: Past, Present & Future



Moore: Factor 10 every 6.5 years

Dark Matter Searches: Past, Present & Future





Construction of the Central PMT Arrays for LZ in Brown Cleanrooms



Construction of the Central PMT Arrays for LZ in Brown



LZ PMT Array Assembly (500 PMTs): Class 100 Conditions

Construction of the Central PMT Arrays for LZ in Brown Cleanrooms



Identification of Dark Matter 2018

My thanks in advance to Brown University, Brown Physics Department
to Mary Ann Rotondo and Jessica Pontarelli, Brown Physics
to Jody Soares and Megan Dupre, Brown Conference Team

to my Faculty colleagues on the local organizing committee

and to the army graduate students, who you will be able to identify by their
fetching yellow t-shirts

Please upload your slides to Indico,
and use our web site <http://idm2018.brown.edu> as ready source of information

And please remember to subscribe to @IDM2018Brown
in case we have to issue a Hurricane warning

