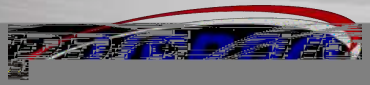


United States

The ITER International School (IIS) is organized regularly with the goal of giving young scientists and engineers a taste of the stimulating, multi-disciplinary and challenging field that is nuclear fusion.

Organized for five days around a specific theme, the School offers lectures by leading specialists from research organizations within the ITER Members and from the ITER Organization, stimulating discussion sessions, and the opportunity for students to publicize their own research through poster presentations.

Because of COVID-19, it has been 3 years since we had been able to meet this way… we're all very happy to be back!

!"#$%&$'()#*+')#,$-#) .##+$/012 3 '*,#0((#$ 4+05#*,0)6$'+7$,0)#,$0+$%!89$3#: -#*$;<=+)*0#,

%!89$%+)#*+')0<+'($&;"<<($>*#50<=,$0+;'*+')0<+,

!	"##$	%&'()*(+,-.)*/)012,3*/)	45,657)*818,3*9:-,81&*1;59&-*1:739<39
"	"##=	25>5->301?3:3*	@3A*)8&/1/-*;&*)<)*8
B	"##C	%&'()*(+,-.)*/)012,3*/)	+739<3(95,;3/)1&*8),3/8&-*9
D	"#!#	%598&*014)'3901EF%	@3A*)8-GHI,-IH*3<&/913*I1+739<31J-*8,-71&*1@3A*)8&/1259&-*1K).&/)9
L	"#!!	%&'()*(+,-.)*/)012,3*/)	M*),A)8&/1+3,8&/7)9
N	"#!"	%G<)I363I010*I&3	P3I&-1;,)Q5)*/H1G)38&*A
$	"#!D	%&'()*(+,-.)*/)012,3*/)	R&AG(:),;-,<3*/)1/-<:58&*A1&*1;59&-*19/&)*/)
=	"#!L	R);)&01JG&*3	4,3*9:-,813*I1:)I)98371:GH9&/91&*18->3<3>9
C	"#!$	%&'()*(+,-.)*/)012,3*/)	+GH9&/91-;1I&9,5:8&-*913*I1/-*8,-7
!#	"#!C	K3)$-*01T-,)3	4G)1+GH9&/913*I14)/G*-7-AH1-;1+-U),1275'1R3*I7&*A1&*14->3<3>9
~~!!~~	~~"#"#~~	~~%&'()*(+,-.)*/)012,3*/)~~	~~4G)10<:3/813*I1J-*9)Q5)*/)91-;1M*),A)8&/1+3,8&/7)91-*1259&-*1+739<39~~

? "6$. ' ,$)"#*#$'$. '0)0+@$(0,)$A<*$)"0,$,;"<<(B

- After two years of lockdowns we really did not know what kind of turnout to expect
- Typical IIS attendance has been about 135 people
- My big worry when making the arrangements for this meeting was that there would be too few people!

"

! "#$%&'$(&)%*)+*(,-*./..*0123*0%(-"%$(&)%$4*56,))4

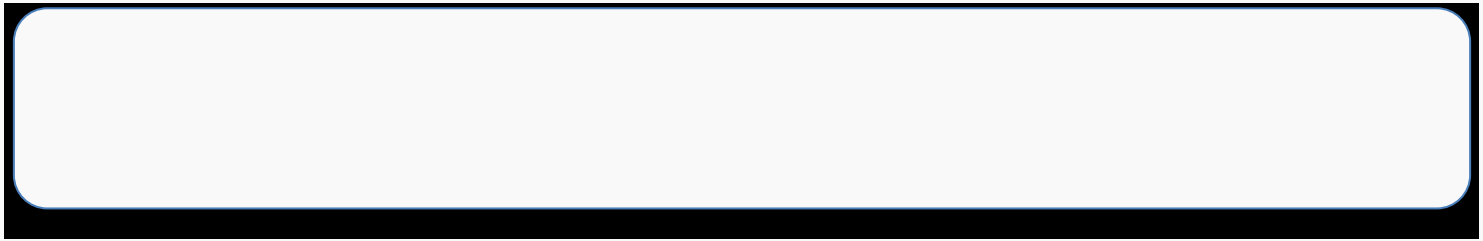
- The US Burning Plasma Organization, along with the ITER Organization, the University of California at San Diego, and General Atomics, are hosting the 11th ITER International School (IIS) on the topic of “ITER Plasma Scenarios and Control” at UC San Diego

- The USBPO is a community organization, formed in 2005 with the mission to "*advance the scientific understanding of burning plasmas and ensure the greatest benefit from a burning plasma experiment by coordinating relevant U.S. fusion research with broad community participation*."
- Most USBPO activities have been tied to ITER
  - Coordination of US input to the ITER design review
  - US representation on ITER STAC and the ITPA Coordinating Committee
  - Discussion of modes of collaboration within the greater ITER research program
- Also takes a role in communicating burning plasma research information to the community via webinars, etc.
- Currently, some USBPO activities have been on hiatus while many members participate in a DOE workshop discussing a US ITER Research Program
- Full membership in the USBPO is open to all US fusion researchers, and associate (non-voting) membership is open to our international colleagues

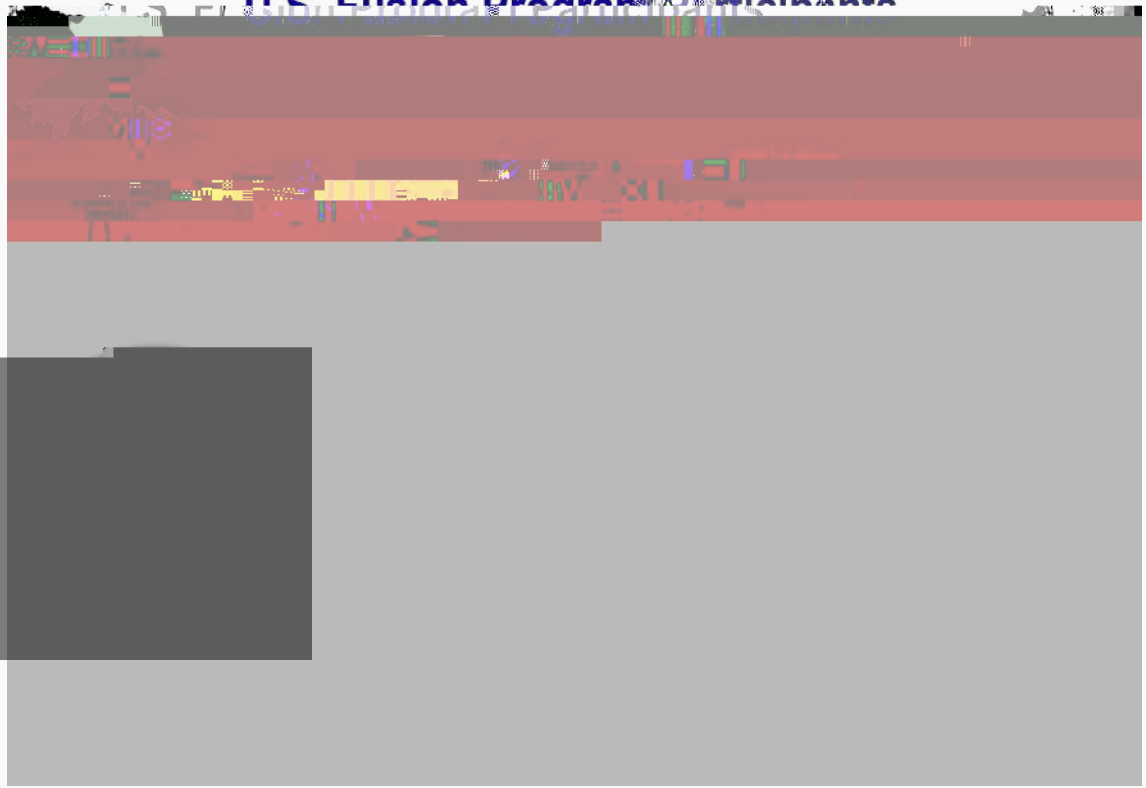
#$$%&'(( )))*+ , - . / . 0%12&3 2*4-0

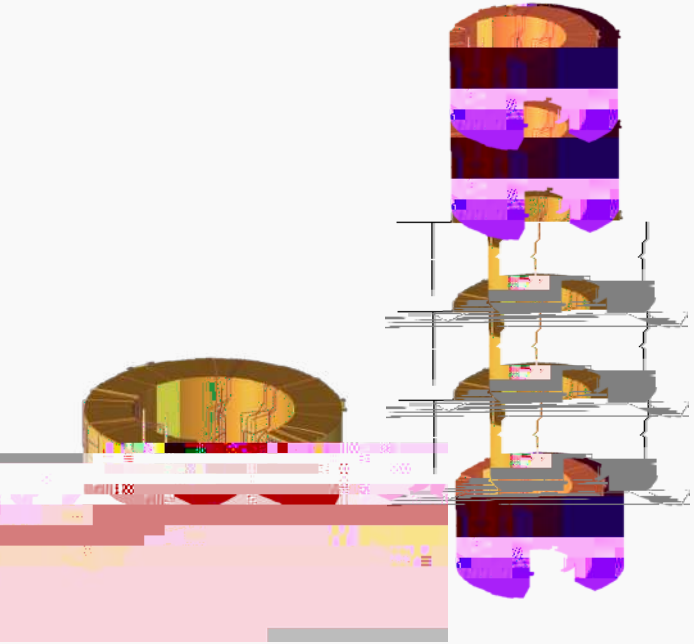
	! "#$%&	' ( )*$%&	+)$#)*$%&	' , (-*$%&	.-/$%&
0#-". i	+)12" 3) *! "#$%& '( ) $&& *+,&%-.( ) & *&$#%(/012,3'*				

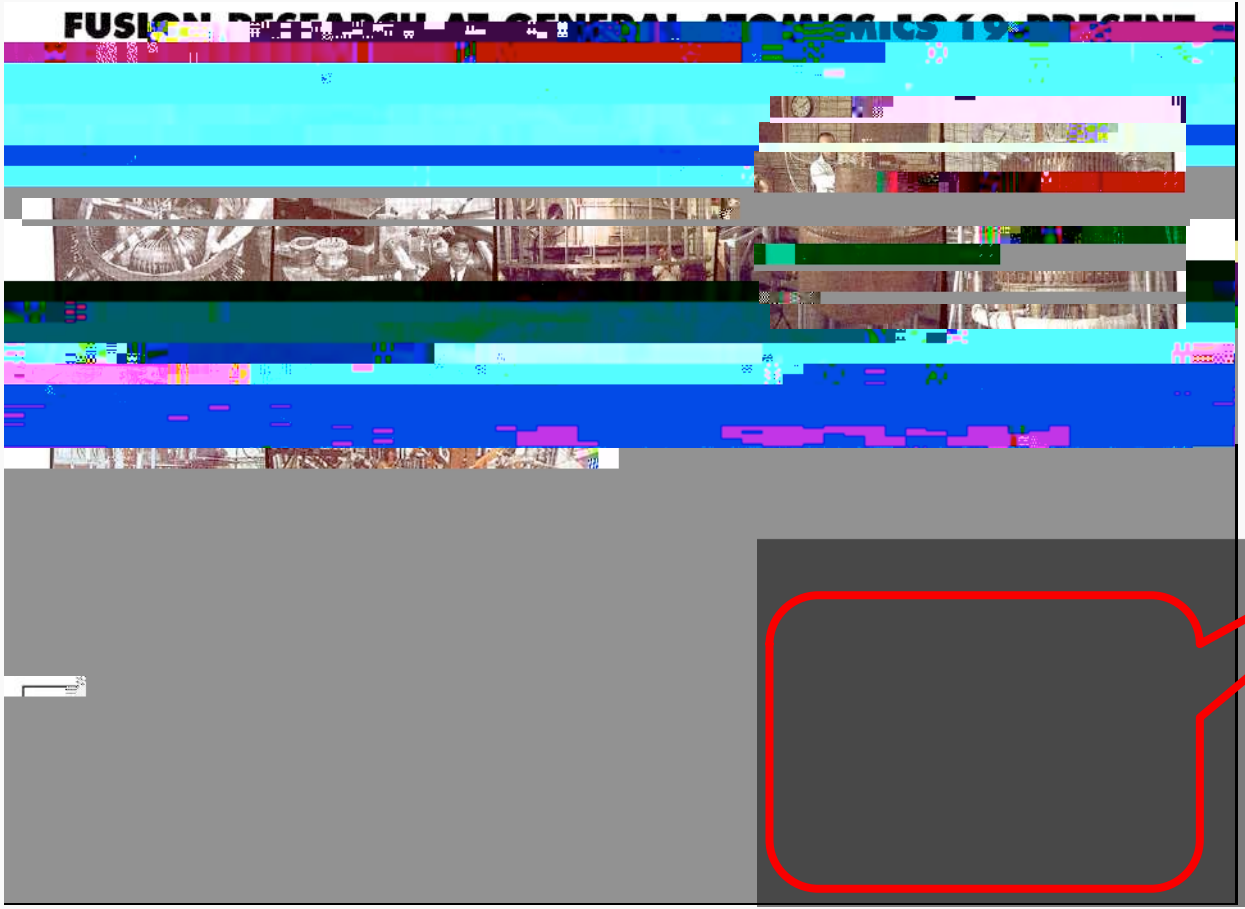
- A detailed agenda is posted at https://iis2022.burningplasma.org/agenda
- The lecture slides will be posted on the school website this week
  - For now they will all be accessible only to registered attendees
  - As we receive permission from the lecturers they will be made publicly available… eventually moving to the IIS archive at https://www.iter.org/education/iis
- Please participate in the discussion sessions!
- *Lunch will be served to all participants outside the auditorium each day*



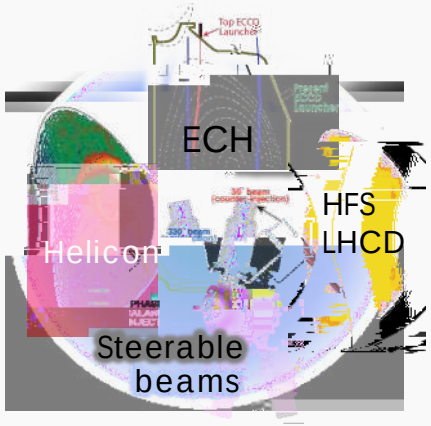
!"#$%&'()#)*(+,'$#'-$.)#/()*.'$&'0,)'1&$0).'20*0)#







GENERAL ATOMICS

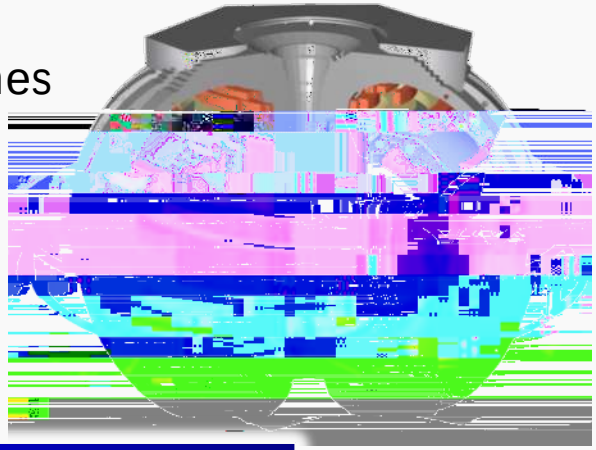


Steerable heating and current drive systems
- Neutral beams, microwave, high harmonic fast wave
- Variable torque, localization, heating, current, electrons/ions

18 field shaping coils & 3 arrays of 3-D coils
- Wide range of plasma configurations
- Probe and control plasma MHD events

! Perturbative materials flexibility & twin power handling zones
- Precisely study cold plasma interactions & shocks

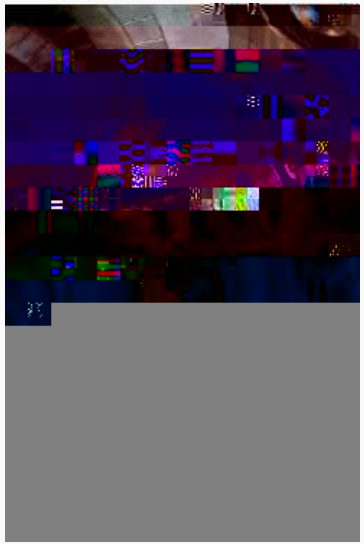
! High temperature bake, cryo-pumping with flexible gas and pellet injection
- Plasma purity, density, profile control & perturbative transport

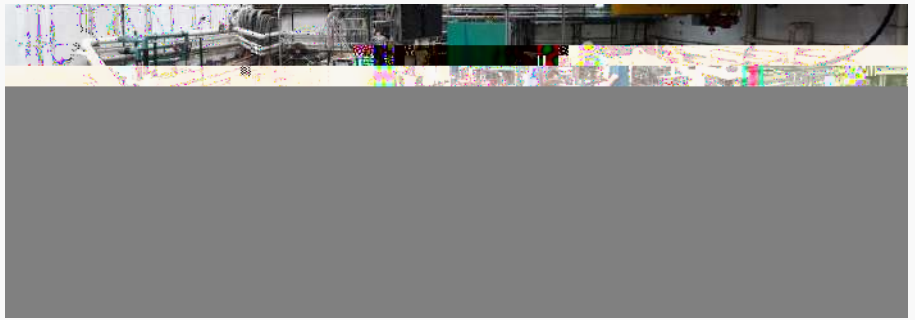


Ability to precisely design and vary plasma configuration

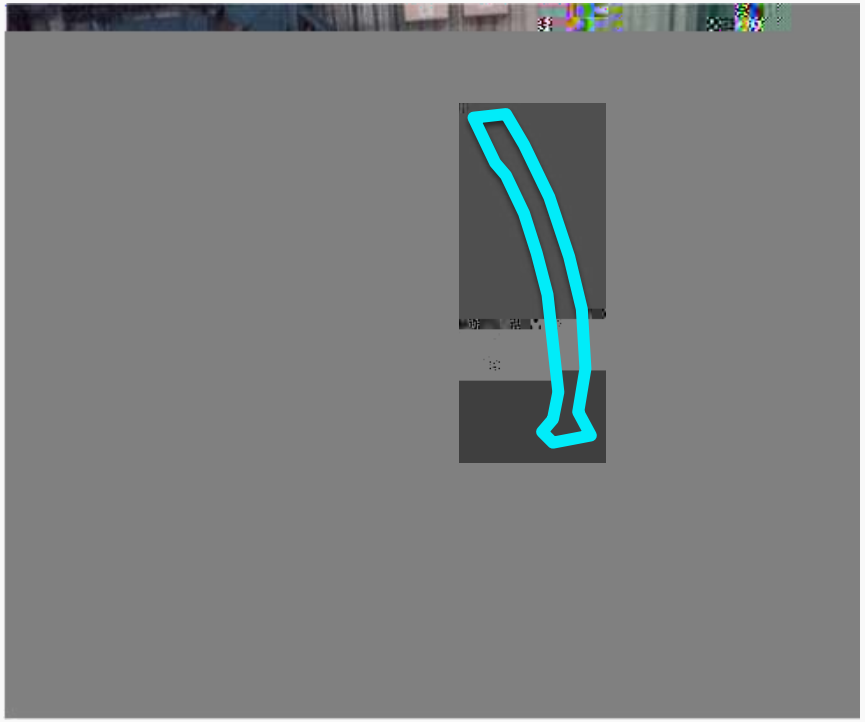
- Comprehensive diagnostics
  - Profiles: current, rotation, T_i, T_e, n_e
  - Magnetic sensor arrays
  -

- One of two US Department of Energy magnetic confinement fusion user facilities in the US
  - Over 800 members of the DIII-D Team come from over 100 institutions throughout the world
- Research on DIII-D covers a broad set of topics including several that help us prepare for ITER*:
  - Scenario development
  - Plasma control
  - Transient control





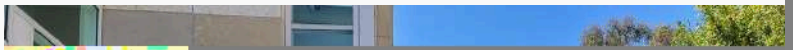
9 : "+/$.;"3#$#&,%$2+"<$=&+,%$
>"05"<;?$0.#/+$#&,%$<"+(,(6



DIII-D during assembly

DIII-D today

!



GENERAL ATOMICS