January: remote for TU Denmark

February: Training course for Erasmus Mundus European Master

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Energy Balance for Ohmic Plasmas on Golem

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February 23, 2016

Abstract

This paper reports the results of an investigation on global energy balance on tokamak Golem[1]. Measurements of interferometer diagnostics, rogowski coil, loop voltage are analysed to calculate power losses and energy confinement time. Discharges with various plasma densities and electron temperatures are compared.

Golem, Power Balance

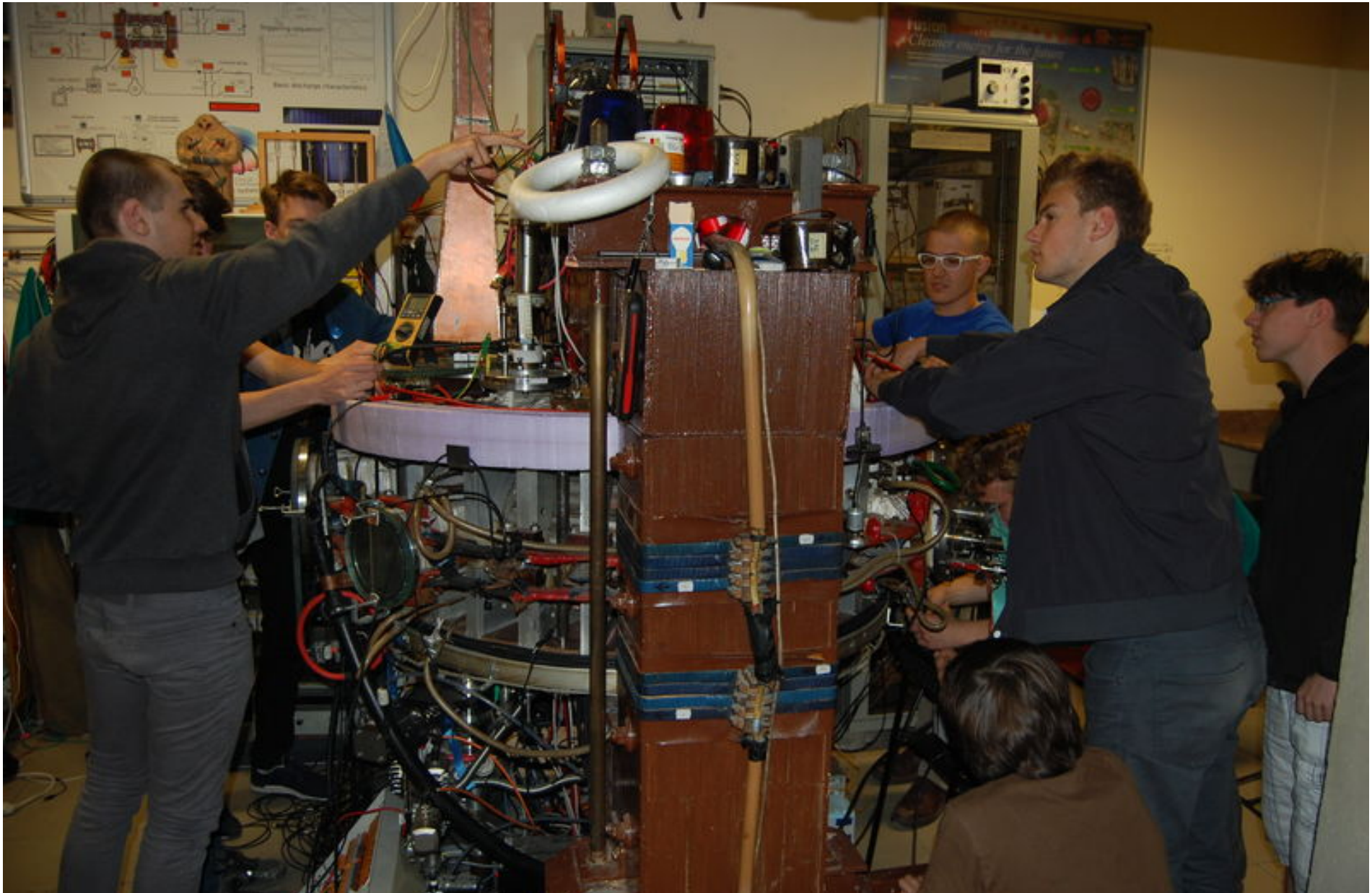
1 Introduction

A tokamak plasma is subjected to power loss

To evaluate the impact of the radiation loss, two different assumptions can be compared. The first hypothesis is that the radiation power and

May: tokamak GOLEM operated by 7 years old boy (under supervision of dr. Stockel)

June: The Science week @Nuclear Faculty, CTU



June: Remote from Kiten workshop

July: Support letter from EUROfusion programme manager office

of fusion research has indicated that for the expected future increase in staffing needs it is important to strengthen the educational activities in the field.

The EUROfusion consortium has taken note of the systematic and successful efforts of the FNSPE CTU in the field of education of future fusion experts, with a significant impact on the European level. Remote experiments on the GOLEM tokamak in Prague are in the curriculum of several European summer schools in the field. Last year, FNSPE organised in Prague the successful FuseNet PhD event for 130 doctoral students in nuclear fusion coming from across whole Europe. This event was possible thanks to a grant from EUROfusion. Many former students of FNSPE continue their careers in fusion either in their own country (e.g. on the COMPASS tokamak) or abroad, while foreign students (e.g. from Serbia) have developed expertise and enthusiasm in fusion research at FNSPE and IPP Prague.

Prof.dr. A.J.H. (Tony) Donné (Programme manager EUROfusion)

September: ITER DG Mr. Bernard Bigot (right) visiting the tokamak GOLEM

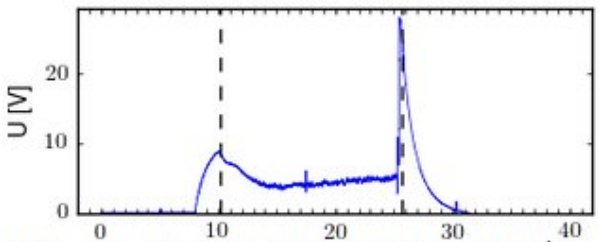
September: The night of scientists

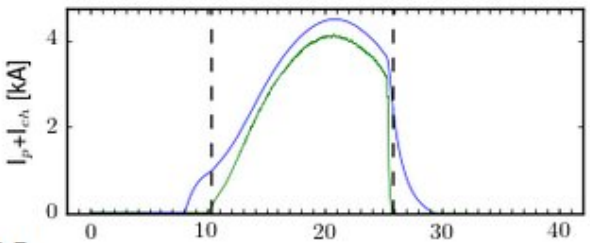
September: Tokamak GOLEM presented in the occasion of the Prince of Monaco visit at ITER

September: Gaudeamus Fair @ Brno

September: Remote training course for Budapest university

15)) (None
Working gas: H
PreIonization: Upper el. gun
Status: OK
Plasma: True





Δt=15.5 ms, <I_p>= 3.41 kA, $U_{I_{BD}}$=8.8 V , <U_I>=4.51 V, T_e=47.5 eV, P_{OH}=15.40 kW , Q_{ed}=3.5

Shot: 22316 **Task:** TrainingCourses/HUNTRAIC/September2016
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Tags: *'breakdown failure','el preionization','Vacuum'*
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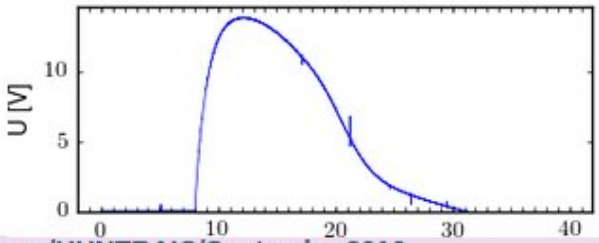
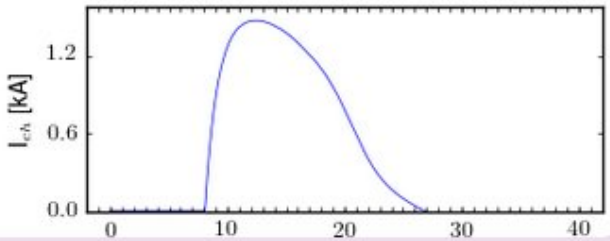
p_{H_2}=0.21->10.06 mPa
Working gas: H
PreIonization: Upper el. gun
Status: OK
Plasma: False





Shot: 22315 **Task:** TrainingCourses/HUNTRAIC/September2016
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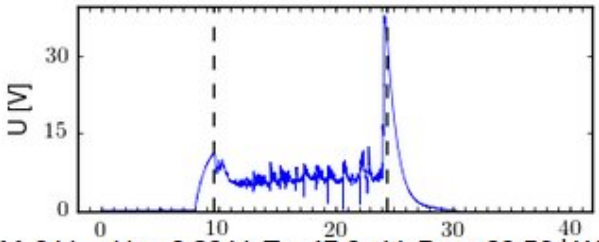
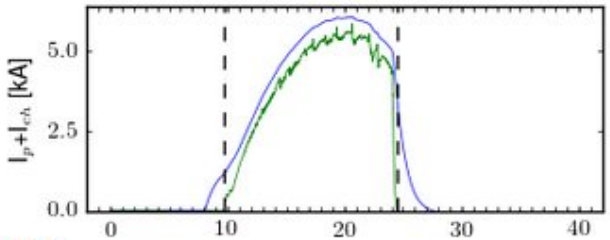
p_{H_2}=0.22->12.10 mPa
Working gas: H
PreIonization: Upper el. gun
Status: OK
Plasma: True

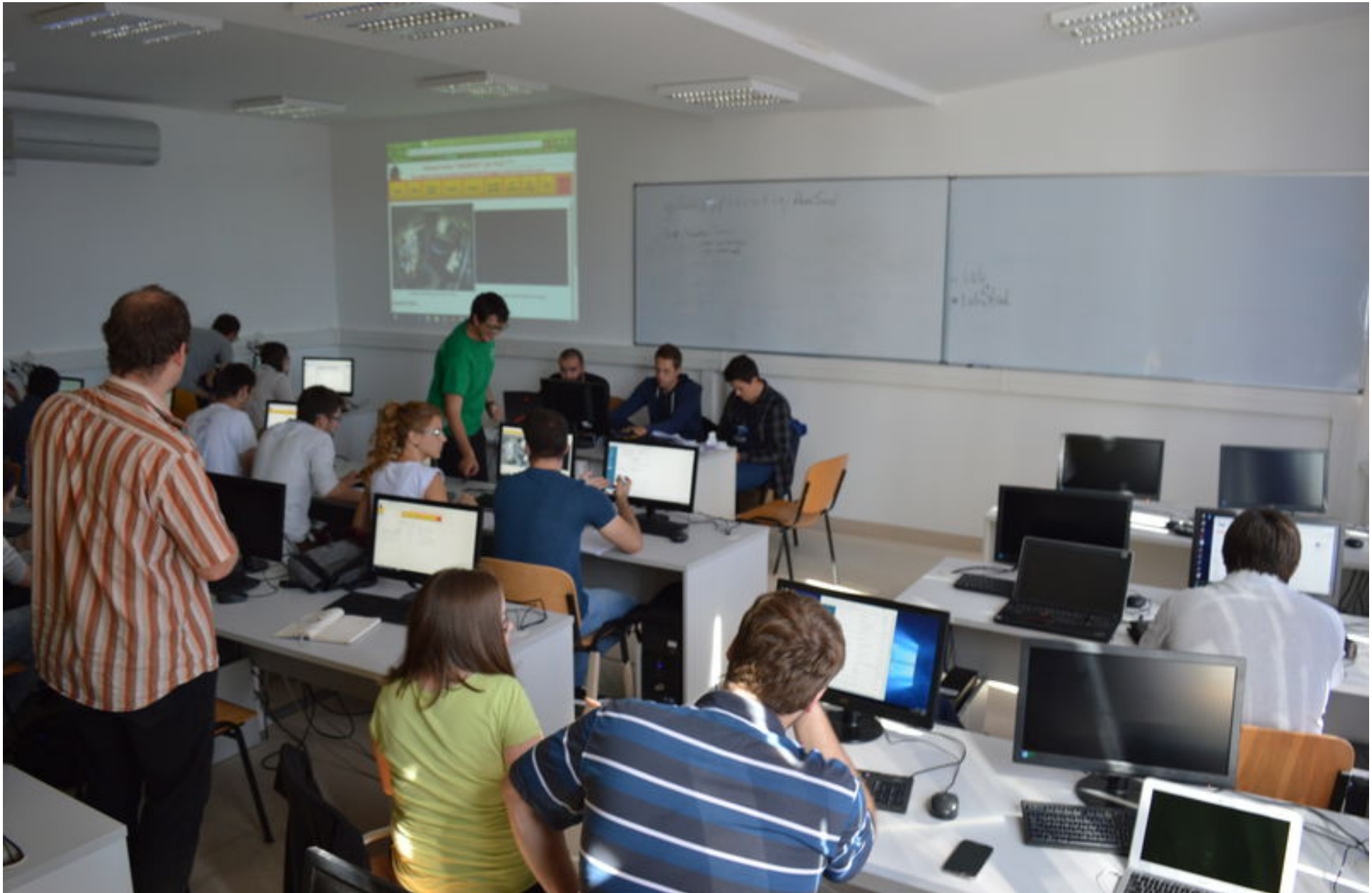




Δt=14.8 ms, <I_p>= 4.69 kA, $U_{I_{BD}}$=11.0 V , <U_I>=6.30 V, T_e=47.0 eV, P_{OH}=29.56 kW , Q_{ed}=2.4

Shot: 22314 **Task:** TrainingCourses/HUNTRAIC/September2016
Comment: *GroupI - Ucd500_P14*
Tags: *'el preionization','hydrogen_plasma','hot_plasma','density estimated','long shot','Plasma','disruption','low Q'*
(None, datetime.date(2016, 9, 15)) (None
(U_B,U_{BD},U_{CD})= (800(5.0 ms),0(5.0 ms),500(8.0 ms)) [V]
p_{H_2}=0.22->13.99 mPa

October: Plasma workshop for Belgrade University



November: Remote workshop for Eindhoven university

November: Report of the 19th Meeting of the International Board of Advisors of IPP.CR

Education is expected to decide on possible support for these two FNSPE projects at the beginning of 2017.

The training activities on COMPASS/GOLEM (EMTRAIC, GOLEM, FUMTRAIC, SUMTRAIC, HUNTRAIC, and GOMTRAIC) are continued. The modern IT tools at GOLEM offer a very good way to attract students, even if the actual tokamak hardware is quite aged. These activities are unique and strongly appreciated within the EU fusion community, and offer hands-on experience for young researchers on tokamak operation which is hardly possible on larger devices. Therefore, IBA strongly recommends the maintenance of these activities (also on the larger COMPASS-U) in parallel with the present level of outreach.

November: Remote training course for Torino politecnico

December: Demonstration for Padova University