



Contribution ID: 700

Type: **Oral contribution**

CRIME - cosmic ray interactions in molecular environments

Wednesday 5 August 2015 15:30 (15 minutes)

Molecular clouds act as targets for cosmic ray interactions, such as gamma ray emission via proton proton interactions. We study the effect of ionization by cosmic ray electrons and protons. Complimentary to gamma ray emission, the ionization rate allows to estimate the cr flux. In particular the ionization rate allows access to proton energies below the pion production threshold (~ 270 MeV). To determine the ionization rate fully relativistic cross sections are used. Based on the single differential cross sections the effect of secondary ionization is treated selfconsistently for both electrons and protons. Our code for the ionization as well as tools to calculate the gamma ray emission based on an assumed cr spectrum is publicly accessible via a webinterface. Based on measured gammay ray fluxes and ionization rates we briefly discuss the case of molecular clouds in the vicinity of supernova remnants.

Collaboration

– not specified –

Registration number following "ICRC2015-I/"

385

Authors: Dr MORLINO, Giovanni (Gran Sasso Science Institute); KRAUSE, Julian; GABICI, Stefano (urn:Google)**Presenter:** KRAUSE, Julian**Session Classification:** Parallel CR22 TH**Track Classification:** CR-TH