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**ELECTRON COLLISIONS ON  $C_4^-$ : DETACHMENT AND DISSOCIATION.** *Arnaud Le Padellec*<sup>1</sup>, *Franck Rabilloud*<sup>1</sup>, *David Pegg*<sup>2</sup>, *Karin Andersson*<sup>3</sup>, *Dag Hanstorp*<sup>3</sup>, *Anita Neau*<sup>4</sup>, *Mats Larsson*<sup>4</sup>, *Fredrik Hellberg*<sup>4</sup>, and *Richard Thomas*<sup>4</sup>. (1) *Department of Physics, Toulouse University, Bat III R1b4, 118 route de Narbonne, Toulouse 31062, France, Fax: 33 56-155-8317, arnaud.lepadellec@irsamc.ups-tlse.fr*, (2) *Department of Physics, University of Tennessee*, (3) *Department of Physics, Chalmers University of Technology*, (4) *Department of Physics, Stockholm University*

Electron collisions of  $C_4^-$  anions were studied using the storage ring CRYRING at the Manne Siegbahn Laboratory of Stockholm University. In a first step, we measured the total cross sections for the neutral  $C_4$ ,  $C_3$ ,  $C_2$  and  $C$  productions. In order to distinguish between the channels contained in the total neutral  $C_4$  production, we inserted a grid in front of the surface barrier detector that recorded these products. We deduced cross sections for the pure detachment, but also for the fragmentation into  $C_3+C$ ,  $2C_2$  and  $C_2+2C$ . We found the pure detachment channel overwhelmingly dominant over any other fragmentation channels, including those that contain mixed neutral and charged fragments. Moreover, the threshold location for the detachment channel is found around 6 eV. We attribute a near-threshold resonance observed in the detachment cross section curve to the short lived  $C_4(2^-)$ . We will discuss its metastability as well as its decay.