

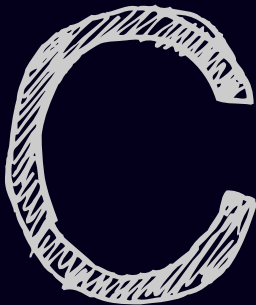
Holes Punched Computabilities

Gregory Lafitte (**joint work** w/ Fabien Givors)

CNRS — Aix-Marseille Université

LICS'11 Toronto, ON

June 22nd 2011



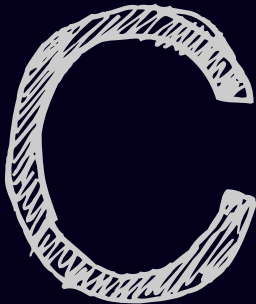
Sub-Computabilities

Gregory Lafitte (**joint work** w/ Fabien Givors)

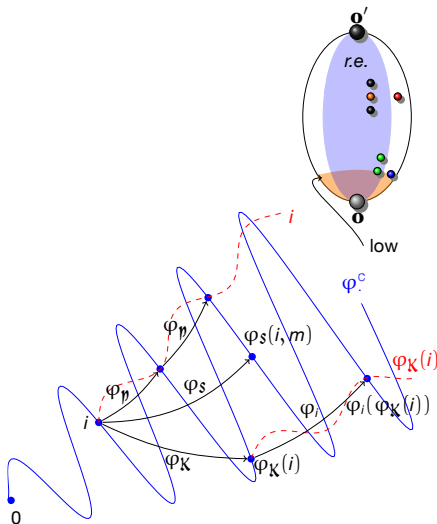
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Someone uttered the word “*computability*”



$\mathbf{W}. (\varphi.)$

padding $\mathfrak{p}$

s-m-n $\mathfrak{s}$

Kleene $\mathfrak{K}$

Rice, Rogers

$$\varphi_i \cong \varphi_{\varphi_{\mathfrak{p}}(i)}$$

$$\varphi_i(\langle m, x \rangle) \cong \varphi_{\varphi_{\mathfrak{s}}(i, m)}(x)$$

$$\varphi_{\varphi_{\mathfrak{K}}(i)} \cong \varphi_{\varphi_i(\varphi_{\mathfrak{K}}(i))}$$

creativity, $\varphi. \leftrightarrow \psi.$

$$\mathbf{K} = \{x : \varphi_x(x) \downarrow\}$$

$\mathbf{BB}$ (Busy Beaver)

Friedberg-Muchnik

low r.e.

minimal r.e. pair

r.e. m -complete

$\neg$ r.e. m -complete

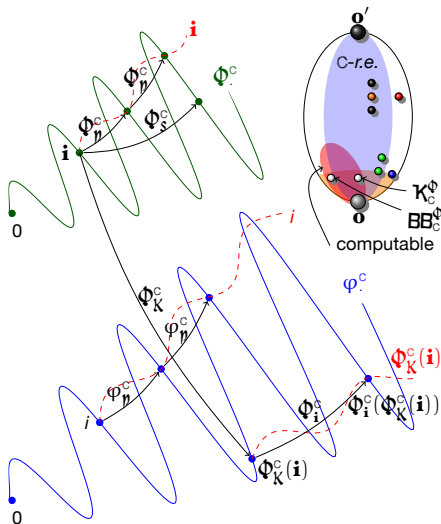
$$\emptyset \prec_T \mathbf{W}_i \prec_T \emptyset'$$

$$X' \preceq_T \emptyset'$$

$$X \preceq_T \mathbf{W}_i \wedge X \preceq_T \mathbf{W}_j$$

$$\Rightarrow X \preceq_T \emptyset$$

Someone mentioned “*sub-computabilities*”



Φ^c : total rec. functions

$\Phi^c, \mathcal{W}^c$ C-r.e.: 1-1 enum. by a Φ_i^c

φ^c C-r.e. graph

Kleene $\mathcal{K}$ $\Phi_K^c(i) \cong \Phi_i^c(\Phi_K^c(i))$
 $\varphi_{\Phi_K^c(i)}^c|_{D_j} \cong \varphi_{\Phi_i^c(\Phi_K^c(i))}^c|_{D_j}$

(co-inf., r.e. $\overline{\text{dom}(\varphi_j^c)} = D_j$) $\varphi_{\Phi_K^c(i)}^c \cong \varphi_j^c$

Rice, Rogers C-creativity, $\varphi^c \leftrightarrow \psi^c$

$\mathcal{K}_c = \{x : \varphi_x^c(x) \downarrow\}$ C-r.e. m -complete

$\mathcal{K}_c^\Phi = \{x : \Phi_x^c(x) > 0\}$ χ -C-low C-r.e.

$\text{BB}_c(x) = \max\{\varphi_i^c(0) : i \leq x\}$ $\neg$ C-r.e. m -complete

$\text{BB}_c^\Phi(x) = \max\{\Phi_i^c(0) : i \leq x\}$ χ -C-low $\neg$ C-r.e.

More? This was an ad for an FCT'11 talk in Oslo.

Thank you.