

**Автономная некоммерческая организация высшего образования
«Университет Иннополис»**

**АННОТАЦИЯ
НА ВЫПУСКНУЮ КВАЛИФИКАЦИОННУЮ РАБОТУ
(МАГИСТЕРСКУЮ ДИССЕРТАЦИЮ)
ПО НАПРАВЛЕНИЮ ПОДГОТОВКИ
09.04.01 ИНФОРМАТИКА И ВЫЧИСЛИТЕЛЬНАЯ ТЕХНИКА**

**НАПРАВЛЕННОСТЬ (ПРОФИЛЬ) ОБРАЗОВАТЕЛЬНОЙ ПРОГРАММЫ
«ПРОГРАММНАЯ ИНЖЕНЕРИЯ»**

Тема

**Руководство по реализации лямбда-исчисления с
параметрическим предикативным полиморфизмом
произвольного порядка**

Выполнил

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ПОДПИСЬ

Иннополис, Innopolis, 2025

Arralac . . . , . . . ,
 , , , , , .
 : , : (constraint-based) к ъ (Trees That Grow).

-
- (arbitrary-rank polymorphism), , GADT,
 - .
 - . К Ъ [1]. Haskell Glasgow Haskell Compiler (GHC)
 - [2]. , , GHC К Ъ, .
 - , , . , . :
 - , [1], , (subsumption), (deep skolemization) (bidirectional checking). [3], К Ъ (eager unification) .
 - GHC, , , . , (constraint-based), К Ъ , . , , MicroHs [4], [5], .
 - Haskell, Hugs [6], , .
 - , , К Ъ, , , , .

Arralac, .

:

1. , , , .
2. , , , , КНБ , .
3. (LSP) , .
4. [7] .

, , .

- , , , .
- , КНБ, . - .
- , КНБ, Arralac. КНБ.
- , КНБ, . (LSP).
- , КНБ, , .
- , .

1.

. , - (STLC) [8]. , STLC - , .
 F [9] , forall a. a -> a. , [10], [11]. Arralac,
 GHC [1].
 -- (HM) [12] . HM 1 (forall) (W), κ N- ъ (Rank-N
 gap), .
 . [1], . (inference) (checking) , . ,
 Arralac.
 , [13], [14] , [15], [1] .

2.

Arralac.

. , . :

- (BNFC [16])
- (α -)
- ()
- ()
- ()
- (Core)
-

. КН (Trees That Grow, TTG) [17] . , TTG , , .
(type families) -. GHC [18] .

. . КН , [1], Arralac , GHC, .

1. (Typechecker). КН (wanted constraints [19]). :

- (EqCt): , .
- (Implication): . , .

2. (Solver). - . КН (skolem escape) (TcLevel). , , n ,
 $m > n$.

, КН .

. : let- (let-generalization) [20], , (Core language) . .

3.

Haskell .

. , TTG (SynTerm x, SynType x) . (, CompTc) ,
(TcAnno).

. :

- Typechecker (Language.Arralac.Typechecker.TcTerm): . pushLevelAndCaptureC
.
- Solver (Language.Arralac.Solver.Solve): -, (occurs check) .
- Zonker (Language.Arralac.Zonker.Zn.Zonk): , , КНБ .

.

- : , , . .
- : , КНБ, . , .
- : Language Server Protocol (LSP). Visual Studio Code ,
(,).

. cloc , 86 Haskell, . , . Nix .

4.

, .
 . [1, Sec. 9.6] . Arralac, :

1. : , .

2. : , КНБ , .

TTG , LSP, .

. ISO 25010 [21]. , () (Nix) , .

. , :

1. let-: . let-.

2. : (Core) , .

3. : . (, КНБ) .

, Arralac , , .

· , , GHC . Arralac .
 , , , . к ъ , . , LSP , .
Arralac , . let-, LSP.
к ъ . Arralac, , . , . , . , .
 , , .

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