# UHMath

**Inherits From:** Object

**Declared In:** UHMath.h

## Class Description

UHMath object communicates with *Mathematica* using MathLink. The user can send any valid *Mathematica* expression to it via **evaluateExpression: toString:** or **plotExpression: toPSView:**. These two general methods will message *Mathematica*'s kernel to carry out the computations. The method **evaluateExpression: toString:** should be used if text output is expected. If the expected output is a graph, use **plotExpression: toPSView:**. These methods use the same link to *Mathematica*; therefore, as long as the link is not closed, the connection to the kernel remains open and *Mathematica* overhead is reduced.

## Instance Variables

int **code**;
MLINK **mlp**;
char * **plotErrorText**;
NXStream ***stream**;
id **resultText**;

id **resultPSView**;

| | |
|---|---|
| code | An integer describing the type of packet sent by *Mathematica*. |
| mlp | Link to *Mathematica*. |
| *plotErrorText | Pointer to a text string containing the most recent plotting errors. |
| *stream | Pointer to a stream which contains output sent by *Mathematica*. |
| resultText | The outlet for **evaluateExpressionFrom:**. It must be a scrollView or a Text object. |
| resultPSView | The outlet for **plotExpressionFrom:**. It must be a PSView. |

## Method Types

| | |
|---|---|
| Initializing a new UHMath object | - init |
| Opening and closing a link | - openLink<br>- closeLink |
| *Mathematica* requests | ± evaluateExpression: toString:<br>± evaluateExpressionFrom:<br>± evaluateExpression: toText:<br>± plotExpression: toPSView:<br>± plotExpressionFrom: |
| Errors | - plotError |

## Instance Methods

**closeLink:**

- **closeLink**

Closes the link to *Mathematica*. Returns **self** if successful, otherwise returns **nil**.

**See also:** - **openLink**.

**evaluateExpression: toString:**

- **evaluateExpression:**(char *)*exp* **toString:**(char **)*string*

It evaluates the expression in *exp* and places the result in *string*. Returns **self**.

**See also: ± evaluateExpressionFrom:**, **± evaluateExpression: toText:**,- **plotExpression: toPSView:**, **± plotExpressionFrom:**.

**evaluateExpression: toText:**

- **evaluateExpression:**(char *)*exp* **toText:**(id)*aText*

It evaluates the expression in *exp* and places the result in *aText,* which must be a **Text** object. Returns **self**.
**See also: ± evaluateExpressionFrom:**, **± evaluateExpression: toString:**,- **plotExpression: toPSView:**, **± plotExpressionFrom:**.

**evaluateExpressionFrom:**

- **evaluateExpressionFrom:***sender*

It takes the expression from *sender* and places the result in *resultText,* which must be a **Text** or a **ScrollView** object. The *sender* must be a subclass of Control. Returns **self** if successful, otherwise returns **nil**.

**See also: ± evaluateExpression: toText**, **± evaluateExpression: toString:**,- **plotExpression: toPSView:**, **±plotExpressionFrom:**.

**init**
- **init**

Returns **self**.

**openLink**
- **openLink**

Opens a link to *Mathematica*. Returns **self** if successful, otherwise returns **nil**.

**See also:** - **closeLink.**

**plotError**
-(char *) **plotError**

Returns the most recent plotting error.

**See also:** - **plotExpression: toPSView:**.

**plotExpression: toPSView:**
- **plotExpression:**(char *)*exp* **toPSView:** *aView*

It plots the expression in *exp* to *aView,* which must be a **PSView.** Returns **self** if successful, otherwise returns **nil**.

**See also:** - **evaluateExpression: toString:**, **± evaluateExpressionFrom:**, **± evaluateExpression: toText:**, **±plotExpressionFrom:**.

**plotExpressionFrom:**

- **plotExpressionFrom:***sender*

It takes the plot expression from *sender* and plots it to *reusltPSView,* which must be a **PSView.** The *sender* must be a subclass of Control. Returns **self** if successful, otherwise returns **nil**.

**See also:** - **evaluateExpression: toString:**, **± evaluateExpression: toText:**, **± evaluateExpressionFrom:**, **± plotExpression: toPSView:**.