addNoise2Covariance

Add noise to covarianc matrix for noisy observations. Add noise along matrix diagonal.

Syntax

```
Ky = addNoise2Covariance(K, s2n)
```

Description

Ky = addNoise2Covariance(K, s2n) witch on additive noise on covariance matrix diagonal. Uses eye matrix as mask.

Examples

```
addNoise2Covariance(zeros(4), 2)
```

Input Argurments

K N x N covariance matrix. Noise free.

s2n real scalar value.

Output Argurments

Ky covariance matrix for noisy observations.

Requirements

- Other m-files required: None
- Subfunctions: eye, mustBeSquareMatrix
- MAT-files required: None

See Also

- initKernelParameters


```
function Ky = addNoise2Covariance(K, s2n)
    arguments
        % validate K as square matrix
        K (:,:) double {mustBeReal, mustBeSquareMatrix(K)}
        % validate s2n as scalar value
        s2n (1,1) double {mustBeReal}
    end

    % add noise with eye matrix
    Ky = K + s2n * eye(size(K));
end

% Custom validation functions
function mustBeSquareMatrix(K)
    % Test for N x N
    if ~isequal(size(K,1), size(K, 2))
        eid = 'Size:notEqual';
        msg = 'K is not size of N x N.';
        throwAsCaller(MException(eid,msg))
    end
```

```
end
```

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